

Annex 1



ICT & Digital Strategy 2017-2020

Information and Communications Technology (ICT)

**A Strategy and Three-Year Plan for March 2017 to
December 2020**

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CONTENTS

EXECUTIVE SUMMARY	3
1. INTRODUCTION	5
2 CORPORATE AND DEPARTMENTAL AIMS.....	5
3 TECHNOLOGY CHANGES OVER THE PERIOD OF THIS STRATEGY.....	8
4. DIGITAL: THE KEY TECHNOLOGY CHANGE.....	9
5 OTHER TECHNOLOGIES OF RELEVANCE.....	16
6 CURRENT ICT PROVISION AND AREAS FOR IMPROVEMENT	19
7 ICT: A VISION FOR 2020	25
8 PROPOSED WAY AHEAD: WORK UNDER WAY AND SHORT TERM PLAN	27
9 PROPOSED WAY AHEAD: MEDIUM TERM PLAN: JULY 2018 TO JUNE 2019	36
10 LONG-TERM PLAN: JULY 2019 TO DECEMBER 2020	37
11 NEXT STEPS	38
12 REFERENCES	40
APPENDIX A: MOORE’S LAW.....	43
APPENDIX B: GARTNER’S TOP 10 TECHNOLOGIES FOR GOVERNMENT.....	44
APPENDIX C: CLOUD TECHNOLOGY AND ITS ADOPTION BY THE COUNCIL	47
APPENDIX D: METHODS USED IN DIGITAL DEVELOPMENT.....	50
APPENDIX E: GOVERNMENT SECURITY CLASSIFICATIONS	52
APPENDIX F: VOIP TELEPHONY	54
APPENDIX G: MOBILE TRIAL – LESSONS LEARNED.....	56
APPENDIX H: CURRENT TECHNOLOGY MODEL.....	57
APPENDIX J: CORPORATE TIME LINES	58
APPENDIX K: BUSINESS APPLICATION TIME LINES	59

EXECUTIVE SUMMARY

1. This document, covering the period to December 2020, summarises the aims and requirements of the Council and its constituent departments. It examines emerging technology, predicting how this will affect the Council and its operations over the period. It describes the technology currently in place, noting those areas where the Council has significant scope for improvement, and recommends a way ahead. It casts a vision of how things could be at the end of 2020, noting that there are less than 1000 working days until then, and that funds and staff time are limited. Finally, it proposes how to get from where we are now, to where we want to be.
2. The aims of the Council are clearly understood:
 - Value for money
 - A strong and resilient economy
 - People have the life skill and education opportunities they need to thrive
 - People live healthy and active lifestyles
 - A clean, green, growing and sustainable place
 - Strong, safe, supportive, and self-reliant communities
3. The Council is currently undergoing a major transformation, both in response to diminished funding, but also to become more effective and efficient. ICT will be a key enabler during the three or so years during which this transformation will take effect, facilitating more mobile working, enabling staff the flexibility to work from home, at other sites, or in a hot-desking fashion, accessing the information they need, collaborating on-line with colleagues wherever they are, and working increasingly over time on a multi-organisational basis. Note that the ICT strategy must align with and underpin the Council-Wide Support Services review, and the Citizen and Customer Contact programme, both of which are key elements of the transformation.
4. This strategy notes the major trends in technology currently emerging, which include the digital workplace and multi-channel engagement with citizens, analytics, risk-based security (as opposed to the locked-down approach of earlier times), and the beginnings of 'intelligent agents' and 'smart machines', which will eventually – although probably not during the life of this strategy – replace many local government staff through the automation of their roles.
5. Special attention is paid to the digital agenda, which will have a major impact both on the Council's contact with citizens (where digital channels hold great promise in providing an improved customer journey, while reducing Council costs), and on back-office operations, where the same benefits accrue. Self-service and self-reliance are important themes here, for both citizens and staff working within the council, in this increasingly digital world. Note that it is imperative that end-to-end processes, and indeed desired outcomes, are examined and thought through, re-designing them as appropriate, if we are to avoid simply creating digital versions of processes that were optimised for the paper, postal service and telephone era.
6. Current ICT provision is examined in some detail, and a range of specific improvements proposed, to enhance user experiences and to support the transformation agenda. As with the national digital guidance, the first rule of design will be 'start with user needs'. The possibilities of shared ICT services with other Councils are reviewed. A vision for ICT in the Council by the end of 2020 is presented, and work is proposed in some detail within three time-frames, from the present to June

2018 (noting that some of the improvements are already in train), in the medium-term, July 2018 to June 2019, and finally in the longer term, July 2019 to December 2020.

1. INTRODUCTION

- 1.1 Any local authority, but especially a unitary Council, is a highly complex organisation, pursuing multiple and diverse lines of business, in an environment of increasing austerity. It is more important than ever that Bracknell Forest Council's ICT is efficient and effective, and aligns closely with the organisation's current and emerging needs.
- 1.2 This strategy document, which covers the period 2017-2020, summarises the current aims and requirements of both the overall organisation and its constituent departments. It examines emerging technology, and predicts how this will affect the Council and its operations over the period. It describes the technology that is currently in place, in the context of current best practice, noting those areas where the Council has significant scope for improvement and recommending a way ahead. It casts a vision of how things could be at the end of 2020, tempering an idealised prediction with the reality that there are less than 1000 working days to the end of the decade, and that both funds and staff time are limited. Finally, it proposes how to get from where we are now, to where we want to be.

2 CORPORATE AND DEPARTMENTAL AIMS

- 2.1 The aims of the Council are well publicised (Ref 1):
 - Value for money
 - A strong and resilient economy
 - People have the life skills and education opportunities they need to thrive
 - People live healthy and active lifestyles
 - A clean, green, growing and sustainable place
 - Strong, safe, supportive, and self-reliant communities
- 2.2 As in any organisation, everything that is done should be directed towards, and supportive of these strategic aims. ICT is in many ways an enabler, the means whereby the operational, managerial and leadership elements of the organisation are provided with the tools they need to perform effectively. A good ICT function is not merely a passive provider, responding to requests generated on the basis of organisational need, a taker of orders from departments who then await their turn for their needs to be met. An effective ICT team is aware of the potential of emerging technologies, and the ways in which they could help the organisation meet both its current and emerging needs. It should therefore be in constant dialogue, helping to shape thinking in the rest of the organisation, feeding back the organisation's needs to ICT colleagues, and ensuring that the Council both gets the very best technology, and can use it to maximum effect. This must be the *raison d'être* of ICT, and its daily motivation.

Council Transformation

- 2.3 The Council is currently undergoing a major transformation, in part to respond to substantial cuts in funding causing the need for substantial savings, but also to be fit for the future and best placed to meet its aims, in changing and austere times. A Transformation Board was established in October 2015 to develop and deliver the programme, to fulfil the Council Plan's commitments to review the focus and delivery of all services over the following three years (when savings of £23m will be required). Those services representing major areas of expenditure are being reviewed in detail,

to make them fit for the future. It is especially important that the ICT strategy aligns with, and fully supports both the Council-Wide Support Services review, and the Citizen and Customer Contact Programme, which form part of the larger agenda, along with the initiatives described below.

2.4 The Council is also undertaking a programme to become more flexible and mobile, and this will achieve a range of benefits:

- More effective delivery of services in the field
- Increased accessibility of services outside Council offices
- Enabling professionals to spend more time with their clients
- Reduced travel costs and travelling time
- More responsive to customer demands
- More effective and efficient
- Reduced paperwork

2.5 The flexible and mobile working strategy also ties in with a revised accommodation strategy, initially approved by the Executive in 2011, which has a number of key principles:

- Rationalising the amount of accommodation that the Council occupies
- Locating customer-facing staff in the town centre
- Accommodation to be accessible and within the outer town centre ring-road
- Modernising customer service delivery and provide one point of contact for the public
- Locating the democratic function (Council Chamber and associated meeting/office space) in the town centre to enable public access
- An accessible town centre library providing a modern service
- Staff working within their service teams
- Staff working space allocation of approximately 1:8 square metres
- The adoption of flexible working practices for staff
- Sharing meeting space to reduce the Council's overall requirements

Work has also been progressing to further reduce the number of desks available in town centre offices and enabling staff to work flexibly/remotely – the aim is a staff to desk ratio of 5:3 - which experience in other Councils has shown is readily achievable, and to consolidate into one building all central functions. As a result, all jobs in the town centre offices have been evaluated and classified as either fixed or flexible (see Section 6.2.5 for a definition of these ways of working). A programme of work is under way to equip Time Square accordingly, and to support staff through the required changes.

2.6 A fundamental part of the restructure will be a change in the organisational culture, described in detail elsewhere (Ref 2), but summarised as:

- Empowering managers and communities to be more self reliant
- Closer working with voluntary sector, partners, and communities
- Blending a more commercial outlook combined with public sector ethos
- Maximising the use of digital and automation
- Joined-up and whole systems thinking
- Managing risk and greater tolerance of risk

- Breaking down silos and sharing information
- Consolidating and removing duplication
- Redesign of structures to reflect needs of a reducing organisation
- Smarter use of buildings e.g. libraries
- Invest in self-service technologies
- Invest in volunteering
- Outsourcing – changes to service delivery e.g. key leisure sites

As will be explained later in this document, ICT has a major part to play in helping many of these aims to be met, both within the Council and in the community.

Departmental Requirements

2.7 Discussions with the operational departments within the Council have revealed several common themes, in terms of how ICT can best serve their needs:

2.7.1 There is a clear view that security considerations have caused the Council to provide ICT systems and services that are harder to use and more inflexible than is desirable. In reality, there must be a balance between externally imposed rules (and their local interpretation), the threats that exist, and the Council's need to operate efficiently and effectively. A carefully thought-through balancing of these factors, combined with a considered view of organisational risk appetite, should inform decisions on the ICT solutions provided. There is a view that the balance to date has erred on the side of over-zealous security to the detriment of business operations, and there is a clear desire to remedy this. This will be addressed.

2.7.2 The organisation is seeking to embrace flexible and mobile working, with all that entails. There is a view that the technology provided to date has not always helped in achieving satisfactory progress in that journey. This must be remedied.

2.7.3 There is a view that the ICT Department has not been close enough to the business, working to understand their strategic needs, sensitive to operational issues with an ICT component, and able to represent the 'art of the possible' in terms of current and emerging technology. Lines of communication are considered haphazard, with (as is often the case) the feeling that ICT staff are very helpful, once you talk to the right person, but with less mutual understanding at a higher level, and no information being available on the plans that ICT has for the future.

2.7.4 There was a view that the organisation has not yet embraced the power of 'big data' and analytics, which is now widely felt to be of fundamental importance to effective local authority actions. Similarly, the lack of coherence across the multiple data sources in the organisation, and the lack of a document and records management capability (although a strategy to address that has now been created), were prominent in many people's minds. In an era when social care is under stress nationally, and closer working with the NHS and other organisations is at the top of the agenda, this is an area where the Council needs to be on the front foot.

2.7.5 Departments depend fundamentally on their specialist line-of-business software applications. It is quite normal for a local authority to have several hundred such applications, ranging from the large systems that support social care and finance, to the smaller, specialist systems used by a handful of people, perhaps relatively infrequently, but nevertheless absolutely needed. It is essential that these systems are well supported, are upgraded when necessary and in good time, and have their performance monitored so that emerging problems are swiftly addressed. Each

application should have a plan of upgrades, based on the supplier's roadmap, and that should be mapped onto the ICT Department's plan of activities, so that the relevant staff with specialist skills can be deployed appropriately. Periodically, there should be a review of applications, looking externally at what the market is offering, what other authorities are doing, what is currently regarded as best practice, and how well the existing applications meet the Council's current and emerging needs. This is undramatic, workaday activity, but essential to the effective operation of the Council, and it must be performed effectively. Note that there was no feeling that the current operation of application support is lacking – but there was an understanding that this must remain a priority area.

- 2.7.6 It should be noted that in any ICT operation, most of the effort – typically 70% – is dedicated to operational activities, often referred to as 'keeping the lights on'. This is not widely understood, since the more visible side of ICT is around change – new equipment, new software, new ways of working. In fact, there is no reason why non-ICT specialists should understand the finer details of any ICT work, including both routine operations and change, and it is quite understandable that most staff in the organisation occasionally get impatient with ICT and the pace at which things happen. The onus is on ICT, then, to communicate clearly, to share plans, to explain, and to set and meet expectations. The onus is on the rest of the organisation to play their part too, articulating their requirements as clearly as possible, avoiding scope creep, making staff available for testing both prototypes and developed systems, ensuring that training is delivered effectively, playing their part in achieving operational benefits when new ICT systems are deployed, and so forth. This mutuality of understanding and commitment is of fundamental importance, and indeed more important than ever in austere times, if the Council is to have first-class ICT, and to use it to best effect.

3 TECHNOLOGY CHANGES OVER THE PERIOD OF THIS STRATEGY

- 3.1 The pace of technological change shows no sign of abating. Fundamental drivers include Moore's Law¹ (see Appendix A), the globalisation of production keeping hardware costs low, the consumerisation of technology, and the growth of internet usage for both business and leisure, which in turn stokes demand for connectivity (both fixed and mobile), and the demand for cheap and ever-improving end-user devices. The digital revolution, described in more detail below, is changing our lives. There are also emerging changes in technology, on a slightly longer timescale, which will undoubtedly bring about even more fundamental changes over the next 10 – 15 years.
- 3.2 Gartner, a well-respected technology-watch organisation, said in a June 2016 report (Ref 3) that the major strategic technologies for government are as follows; bear in mind that these are global rather than UK-specific views:
- The Digital Workplace
 - Multichannel citizen engagement
 - Open Any Data
 - Citizen e-ID
 - Analytics Everywhere

¹ Every two years or so, the number of electronic components that can fit onto a given area on a silicon chip, doubles, and so processing power, memory density etc. will double. This has held true since the mid 1960's, and is predicted to run for some years to come

- Smart Machines
 - The Internet of Things
 - Digital Government Platforms
 - Software-defined Architecture. (This is the use of software to rapidly reconfigure networks storage, security and other aspects of infrastructure; note that the end user will not be aware of any of this, but there are real benefits in cost-effectiveness and performance of the infrastructure.)
 - Risk-Based Security
- 3.3 Appendix B gives more details of Gartner's predictions. Note that in Gartner's predictions of recent years, cloud technology was at the head of the list as a key emerging technology. It has no longer on the list: it is now regarded as being a mainstream technology. (Appendix C describes this in more detail, in the context of the rate at which organisations generally adopt new technology, and the recommended way ahead for Bracknell Forest).
- 3.4 Forrester, another technology-watch organisation, predicted in September 2016, that the following are the technologies to watch in the period 2017-21 (Ref 4). Note that these are more oriented to the commercial world, but of course that is where technology is often first developed and exploited.

Systems of Engagement Technology

- The Internet of Things (IoT) software and solution
- Intelligent agents (chatbots, digital assistants, robotic process automation)
- Personal identity and data management
- Real-time interaction management (customer recognition, offering arbitration and delivery)
- Augmented and virtual reality

Systems of Insight Technologies

- Artificial Intelligence / Cognitive (deep learning, natural language processing)
- Customer Journey Analytics (built into marketing and customer management)
- Insight Platforms (business analytics)
- IoT analytics
- Spatial Analytics (in-store analytics, location intelligence)

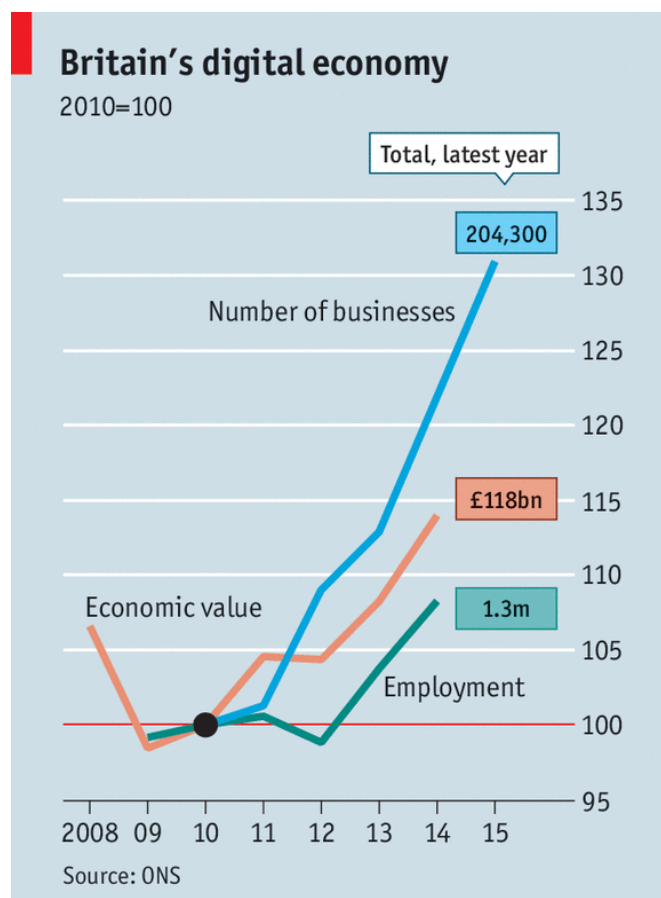
- 3.5 TechRadar, an on-line technology website (Ref 5) has predictions that include:
- Increased use of voice search
 - Increase in the use of chatbots
 - Blockchain finding its first use outside bitcoin, probably within banks
 - More investment in Artificial Intelligence
 - An operating system for the Internet of Things
 - Virtual reality devices advancing in both the consumer and business markets
- 3.6 Technology predictions are notoriously unreliable, but it is possible to interpret the implications of the above, in the context of an English local authority over the period 2017 -20, and possibly some way beyond.

4. DIGITAL: THE KEY TECHNOLOGY CHANGE

- 4.1 Front and centre in the current environment is the impact of 'digital', in the context of both citizen interactions and the internal operations of the Council, and this will now be explored in more detail.
- 4.2 It is worth explaining what 'digital' means in this context, since the term has been somewhat overused in recent times. Of course, computers have been 'digital' since their inception (they deal in binary digits, ones and zeros), but that is not what is meant here. From the consumer point of view, digital refers to the use of internet connectivity, typically through mobile devices, in interactions for social or business purposes, typically brief in nature. The driver for this has been smartphones – now owned by over 80% of the UK population – which allow simple, anytime, anywhere interactions. These interactions will not be typically complex or time-consuming (this isn't convenient on a small device), but will be more immediate and often short-lived. For instance, in the social media world, Snapchat is now the fastest-growing social network (Ref 6), overtaking Twitter and Pinterest, and what makes it different is the short-lived nature of the messages, and the highly visual interface, plus the ability for users to tailor the images to specific locations and events. Snapchat deletes these 'stories' after 24 hours (Ref 7).
- 4.3 While the average Snapchat user will be younger (60% of its users are under 25 – Ref 8), the broader point here is that this is indicative of a trend in society towards interactions of all sorts being briefer, simpler, easier... While some decry this as evidence of 'dumbing down' (Ref 9), it is nevertheless a trend that local government should note, and embrace in its interactions with residents. Anything that can be done simply and quickly on-line, ideally in a largely automated way, rather than by phone, on paper or by face-to-face interaction, is cheaper for a financially stretched local authority, and easier for the resident too.

Rapid growth

- 4.4 Although it may feel that the 'digital economy' is now dominant, it does in fact represent just 7% of UK national output (Ref 10), and at £118Bn in 2014, trailed manufacturing which was at £151B. The point, however, is that it is growing much faster than any other aspect of the economy. Figure One below shows this.



Economist.com

Figure One: Growth in the Digital Economy (from Ref 10)

The Government Digital Service

- 4.5 In the world of interaction between citizen and central government, the big change in recent years has been the operation of the Government Digital Service (GDS), formed within the Cabinet Office in 2011. The strategic goal of GDS is nothing less than the digital transformation of government (Ref 11), and it is widely recognised as a world leader. While it is best known for the creation of numerous, well designed government websites for primarily simple transactional purposes, it is really involved in making public services simpler and better, ensuring that government data is of good quality and more widely usable, and that government departments are using the best technology. While the focus of GDS has been on central rather than local government, their design principles and approach are applicable in the local authority world, and they have provided some guidance along those lines, with the Local Government Digital Service Standard (Ref 12) – which Bracknell Forest Council has already signed up to (Ref 13).

Digital and Local Authorities

- 4.6 It is therefore appropriate that local government embraces the growth of digital, using digital approaches to both suit the needs of citizens (who are clearly, through this national growth, demonstrating a wish to adopt digital interactions in many aspects of their lives), and to improve efficiency and reduce costs in the operations of the Council. Quoting from the Council's Customer Contact Strategy (Ref 14):

- Local authorities are increasing their focus on digital business strategies to improve the overall customer experience
- Contact centres continue to be an important channel, although moving more to assisted digital and encouraging self-reliance
- The principal aims of the Customer Contact Strategy are to achieve a substantial reduction in the cost of customer service provision, whilst maintaining levels of quality and customer satisfaction, by (among other things mentioned in the strategy) moving to digital channels wherever possible
- The borough's population is largely online and highly digitally enabled
- The borough has the lowest rating for likelihood of digital exclusion
- The Council is well placed to move to a delivery model making more use of digital channels.

4.7 It therefore seems reasonable to assume that local citizens will be content, and indeed in many cases keen, to interact with the Council digitally, while retaining the option to use other channels, and indeed this is the feedback from the residents' survey referred to in the Customer Contact Strategy cited above. Note that digital contact is best suited to certain types of interactions, those that are transactional, relatively simple in nature, and of a one-off nature (such as reporting something, applying for something, paying for something, etc). Digital is also very useful for just finding something out – be that the date of your next refuse collection, or the name of your Councillor, and clearly these need to be easily accessible on the Council's website. More complex interactions with the Council, relating to such things as social care, housing, and benefits, will often need telephone or face-to-face interaction. Nevertheless, where it is possible to do such things as pre-populate on-line forms, or ensure that data collected from one route is usable in another interaction, that should be done, subject to the usual constraints around the use of personal data.

The approach now proposed for citizen interaction

4.8 The approach to be taken should therefore involve:

- Developing services so that, wherever appropriate, there is a digital channel to allow citizens to interact with the Council.
- Encouraging citizens to use these digital channels, by both their ease of use and 24x7 availability, but also by actively promoting them in our external communications.
- Providing assistance in the use of digital channels, to promote digital inclusion. This could be during the online session itself (where for instance an on-line 'chat' session could be offered, to help guide the user during that session), it could be via on-line 'how do I?' guides and videos, and it could include running classes locally to help those citizens who are less confident with the web to become appropriately digitally skilled. Note that this list is not exclusive, there will be many ways to promote digital inclusion, and it is very much in the Council's interests to achieve this, given that digital interactions are significantly cheaper for the Council than any other channel, and typically give higher user satisfaction (e.g. Ref 15).

4.9 To take this forward, then, there are a number of steps

- Adopt a policy of 'Digital by Default', and review the contact points we have with citizens, examining how these can be digitized, but in a federated manner that fits in digital with all the other customer contact channels.
- Examine how the service being delivered is handled end-to-end, in terms of both technology and business processes, so that we can take full advantage of the digital nature of the citizen interaction and where possible automate the process throughout, thereby achieving savings well beyond those of a simple channel shift.
- Keep abreast of best practice in the digital space, learning from GDS (Bracknell Forest Council is already signed up to the Local Government Digital Service Standard, see Ref 13), learning from the experience of other Councils, and where appropriate adopting common technology platforms. For instance, GDS promotes 'Government as a Platform', essentially the creation of technology building blocks to be used across government for future digital solutions. Thus, there is now a pan-government identity and access management solution, GOV.UK Verify, and plans for a payment engine GOV.UK Pay, and a means of achieving routine communications, GOV.UK Notify. While the needs of local government may be subtly different, we can use these solutions as appropriate, and join in with the nascent initiative to create pan-local government versions, 'Local Government as a Platform' (Ref 16).
- It is important that we do not thoughtlessly digitize existing processes, many of which were optimised for an era of administration based around paper forms, postal delivery, telephony, and face-to-face interaction. This will be an opportunity to examine the outcomes we seek to achieve (from both the citizen and Council viewpoints), and how best to achieve them, with digital as the enabler, and automation, low costs and good customer service the goals.
- In the same way, we should not limit ourselves to the list of existing interactions, although that is a good starting point. We should examine desired outcomes at a higher level, then think in terms of how these outcomes might be achieved, thinking a little more laterally if possible, and how digital systems might be helpful. Thus, to take a simple example, it is well established that social isolation and loneliness among older people is a factor in poor health (Ref 17). Thus, if the Council were to use best practice in digital technology to bring together those seeking more social contact, ultimately the health and happiness of a number of older citizens in the borough would improve, a worthy aim in itself, but also the impact on the social care budget would ultimately be reduced. Furthermore, this need not be something that the Council would do in isolation, but rather in conjunction with relevant charities, other Councils, volunteer groups, and so forth.
- Organisationally, it is vital that a coordinated approach is taken to digital development, to prevent 'digital' and 'ICT' being seen as, and operating as, isolated elements within the authority. The remit of the Chief Officer, Information Services should include ensuring that the integration of digital channels with the current and future ICT infrastructure is facilitated and enabled, and that there is appropriate alignment between proposed innovations in both the digital and non-digital elements of the Council's technology and associated operations.

The Digital Back Office

4.10 While it is appropriate to focus on contact with citizens via digital channels, the adoption of digital technology is an essential part of the transformation of activities within the Council. The NESTA Connected Councils paper (Ref 18) points out that, like the best technology companies, Councils can be lean, agile, and data-driven. A key part of this involves having a workforce that is mobile, which frees up expensive space, allows work to take place in the most appropriate location, and helps create an atmosphere of trust and personal responsibility, and a focus on delivery. Organisations that move to this model of working do not go back, for the simple reason that it works well. A flexible and mobile workforce will also facilitate the ways in which the Council will be working in the future, acting as brokers or enablers, at the hub of a web of innovative partners, providers, and community groups.

4.11 To take this forward:

- There needs to be close alignment with the moves to use digital technology in citizen-facing activities, so that the full end-to-end process is examined, redesigned as appropriate, and automated as far as possible. Any staff in the process should be able to undertake their work in a fully digital fashion, with processes designed as carefully, and in as user-centric a fashion, as they are for the citizen at the front end of the process.
- As outlined above, staff need to be empowered to work in as flexible and mobile a fashion as possible. With digital processes, they will be facilitated in doing this – their interactions will be via browsers and apps, and they will perform only those operations that cannot be readily automated, typically those involving the decision-making skills and perceptual judgements that machines cannot yet perform reliably.
- As stated above, it will not be appropriate to take processes designed for the paper and telephone era, and simply digitize them. It will be necessary to determine what the Council is trying to achieve, and then question whether there is a better way of achieving that outcome.
- There are numerous administrative, back-office-only processes that should be examined – at an outcome level – and either abandoned (if possible) or redesigned so that they are as automated as possible, and human touch-points are both minimised and kept straightforward. This is already happening, with for instance on-line payslips: thus the whole process of printing and distributing them has been abandoned, and the electronic payslip information, which always existed, is now being presented to the employee on-line. Employee self-service and manager self-service in various HR functions will follow. A set of processes that is currently inefficient and disjointed in most organisations, starters / movers / leavers, is ripe for the use of digital technology, with obvious advantages. The list goes on, and it is imperative that that the full spectrum of back office processes is examined, with a view to appropriate re-design and the adoption of digital technology where possible.
- Cooperation and creative joint working will be a big part of the future of the Council, with old and well-established processes, optimised over many years in the pre-digital era, giving way to more fluid and innovative ways of working, both

within the Council and in cooperation with partners. Digital technology must facilitate this, along with appropriately-designed working spaces, so that teams can communicate readily, generate and test ideas, launch initiatives and learn quickly whether they have real potential, and if necessary re-think them and move on. This 'fail fast, fail often' approach is enabled by digital technology and agile design techniques, and of course must be supported by an organisational culture that encourages and rewards experimentation, is perceptive enough to see real potential and how to develop it further, and mature enough to tolerate, even encourage failure as a necessary part of making progress.

4.12 The move to a digital back office aligns with other changes under way in the council, in particular the move to more flexible ways of working. It will support the principle that 'work is a thing you do, not a place you go.' This involves (Ref 19):

- Agile working – the ability to be productive anywhere, and at any time
- Collaboration through technology
- Suitable business applications, including process-specific tools, and employee self-service
- Finding and sharing information and knowledge
- Employee engagement, and an appropriate management culture (moving on from 'presentee-ism', whereby managers only feel comfortable if they have their staff present in the office)

4.13 While the move to becoming a more flexible organisation critically depends on having the right technology in place, it also involves changing the organisational culture, and culture changes are rarely easy things to achieve. Conventional wisdom in the IT world holds that there are three factors to consider in the implementation of any new IT system: people, process, technology. Where culture change is required, the people and process elements need to be supplemented by a number of other factors, well documented in the rich literature on organisational change management (see e.g. Ref 20).

The Importance of Big Data

4.14 The use of data, both big and small, is crucial in the adoption of digital technology. The best businesses in the digital era constantly harvest and learn from data, and the advantages of this are well known in the commercial world. Local authorities are, to a greater or lesser extent, seeing the opportunities in big data and analytics, but it is early days, and more work is needed.

- The adoption of digital technology, and the value of empowerment of, and cooperation among practitioners is beginning to emerge in the public sector. The NESTA Connected Councils report (Ref 18) refers to the Buurtzorg network of home care nurses in the Netherlands, who have adopted a decentralised model so that they manage their own workload, and are financially accountable so there is less need for management. The only 'managers' are regional coaches who are there to support, not direct, decisions. When nurses need expert advice, they post a question on the network's digital platform, and if the problem cannot be solved, they might pay for advice, and then post the solution on the network for the benefit of others. Local authorities can learn from this, for instance seeking to empower

social workers, who are highly trained and skilled practitioners, linking them through technology to the information they need (and in the case of Bracknell Forest, the Connected Care solution will be of major importance, providing relevant information to all those professionals across the Health Service and Social Care about the individuals they are dealing with), trusting them to make decisions that support those they are helping (or indeed, helping those individuals to help themselves), and while backing and supporting those decisions, simultaneously using recorded data to optimise the operation of the whole service, over time.

The Future Digital Council

4.15 A Council of the not-too-distant future, perhaps by 2025 or possibly earlier, might be characterised as follows:

- Lean, data-driven, agile, and adept at solving problems creatively
- Smaller than at present – not simply because of cuts, but because the Council works extensively with partners, has more automated back office functions, and has empowered its front end professional staff so that they require fewer senior managers
- Open, transparent, innovative, and fast-moving. Problems are perceived sooner (big data has helped here), staff work collaboratively both internally and externally to diagnose root causes, and can address problems swiftly and effectively.
- Council staff have been using digital technology for years, are fully conversant with it, and are constantly experimenting with and adopting, refining, or where appropriate rejecting, new technologies. The ‘fail fast, fail often’ approach is now second nature, and staff are invigorated by the constant change, excited by what technology is achieving, and are constantly seeking to improve.
- The Council is increasingly adopting AI-based solutions, which through deep learning / neural reasoning approaches, are supplementing (and in some cases, outstripping) human decision-making capabilities in various areas.

4.16 Appendix D gives details of the methods typically used in generating digital solutions, some of which could have wider application across the council.

5 OTHER TECHNOLOGIES OF RELEVANCE

5.1 Open Any Data: Gartner’s view on open data is that government data will, in the future, be increasingly ‘open by default’. This is UK government policy, outlined in the Digital Economy Bill (Ref 21) which is currently going through the House of Lords (Ref 22). Once this is enshrined in legislation, government organisations will be required to make license-free data available in machine-readable formats, to anyone who has the right to access it, without any requirement for identification or registration, and without trademark or copyright constraints. This will primarily be raw data, as collected at source, but of course subject to privacy and security considerations. The implications for local government are not yet clear, but it does highlight the need outlined above for the Council to achieve coherence in its multiple data sets and its documents and

records management, and in respect of raw data held by the Council to be clear about its provenance, purity and the degree to which it warrants protection.

5.2 Risk-Based Security: This is a more holistic and balanced view of security, based on knowledge of the organisation's key information assets, who has legitimate access to them, and who may wish to steal them, and how and why. This replaces the former approach of simply locking down everything, wherever possible. In the context of the Council, it may be seen as a more considered and intelligent approach to security, based in part on the knowledge that most security breaches occur when people misbehave through accident or ignorance, the solution to which is effective training, clear procedures and treating staff as adults – with the requirement that they take responsibility. It also includes a recognition that excessive security frustrates staff, and leads to insecure workarounds, such as sending sensitive documents to personal webmail addresses to allow easier home working. It will also include replacing the obsolete document marking scheme currently in use within the Council, and ensuring that both technical and other Council staff understand the new scheme, and the thinking behind it within government circles.

5.3 The Internet of Things:

- The IoT is the network of physical objects (fixed or mobile) that contains embedded technology to communicate, monitor, sense or interact with multiple environments, and to communicate over the internet by Bluetooth, wi-fi, 4G or fixed links. This is increasingly being seen as a critical enabler for digital business applications in all private-sector and public-sector industries. The projected uses and adoption rates by government agencies vary, but predicted uses include pay-for-use or subscription-based taxation models, smart waste bin collection, and the remote monitoring of elderly patients in assisted-living settings. Ultimately, its use feeds into smart cities and smart buildings, more intelligent transportation systems, more effective use of mobile assets (including staff), more effective environmental monitoring, and more efficient energy usage. For instance, Los Angeles has sensors on 145,000 streetlights to monitor their health, with 50,000 of them 'smart' devices capable of being dimmed or brightened as needed. The uses are myriad, and the impact within the next 10 years is expected to be huge (see e.g. Refs 23 & 24).
- As is pointed out above, there is a need for an operating system for IoT devices. Thus, just as a computer's operating system controls its operations, loads software when needed, allows inputs from users, stores and retrieves data, manages data output, and generally ensures that the whole system works coherently, so too an operating system for a huge array of widely distributed, relatively simple devices would orchestrate, manage, and make useful the entire network, turning it into an effective entity. Such systems are currently bespoke to the operation of a single IoT; a universal IoT operating system would ensure the more rapid uptake of this important new technology.

5.4 Analytics:

- The concept of analytics and the use of 'big data' is now well understood and increasingly being used in the commercial world (see a good example in how it was used by the Netflix subscription TV service to plan the commissioning of the hit TV series 'House of Cards' (Ref 25); what is lacking is its effective use in local government. A recent report by NESTA (Ref 26) outlined the ways that local authorities can get more value from their data. As it pointed out, local authorities sit in the middle of a web of information, including everything from social care for vulnerable children and adults, Council tax collection to planning applications, and

much else besides. This data is sometimes in incompatible formats, incomplete or incorrect to some degree, hard to analyse, or sensitive. Nevertheless it has huge potential to make services more targeted, to allow the allocation of resources where they can be more effective, to save staff time in both front and back office processes, and to provide insight into the causes of and solutions to costly social problems.

- Customer journey analytics is the use of the above techniques, to understand and analyse primarily web-based interactions, helping with the process of understanding what was going through the customer's mind as they went on the journey, why they dropped out, what routes led to a successful outcome, and so on, in order to optimise the end-to-end journey. Analysis can include interactions with that same customer over multiple channels – web, call centre, on-line chat, email, etc. This is now being used in such areas as higher education, where competition for students is fierce, and where universities want to maximise their opportunity for turning that first exploration of their website, or request for a brochure, into a firm acceptance of an offered place. While this area is still in its early days, it is worth further exploration in the context of local authorities, where stress-free and rapid customer journeys to successful outcomes, ideally over the cheapest channels, are the aim.

5.5 Artificial Intelligence and other advanced technologies: A.I. was seen as an area of great promise in the 1980's, but faded as successes were limited. It has enjoyed a significant renaissance in recent years, with 2015 seen as a breakthrough year (Ref 27), mainly due to the development of 'deep learning' techniques (a subfield of machine learning based on a set of algorithms that inspired by the structure and function of the brain called artificial neural networks). Note that this is a highly technical area, in which advances have been made both through advanced techniques and the availability of far greater computing power. Initial applications lie in automatic speech recognition and language translation (Google Translate is a great example; its effective improved enormously about a year ago, when it was re-engineered to use deep learning technology), image recognition, plus some uses in pharmaceutical research. The growth in the use of 'chatbots' will be a feature of the next few years. Chat bots are computer programs that mimic human conversation with people through text messages, using AI techniques. Some see them as a logical progression from apps (Ref 28), in that the user can initiate a quasi-conversation, and the experience can be like interacting with a human at the other end. This may have potential in local authorities, as a means of replacing some call centre interactions, or improving on some basic app-based interactions, but the technology is emergent and worth tracking rather than adopting wholesale at this stage.

5.6 Block Chain:

- Another technology worthy of note is 'block chain', more properly called 'distributed ledger technology'. Where this relatively obscure technology has come to the attention of the public has mainly been in the use of 'bitcoin', peer-to-peer digital cash that is created and traded independently of governments and central banks, and sometimes associated with criminal activities. The technology it is based on, though, has huge potential in the creation of distributed ledgers. A recent report from the UK Government Chief Scientific Adviser (Ref 29) explains:

A distributed ledger is essentially an asset database that can be shared across a network of multiple sites, geographies, or institutions. All participants within a network can have their own identical copy of the ledger. Any changes to the ledger are reflected in all copies in

minutes, or in some cases, seconds..... Distributed ledger technologies have the potential to help governments to collect taxes, deliver benefits, issue passports, record land registries, assure the supply chain of goods and generally ensure the integrity of government records and services. In the NHS, the technology offers the potential to improve health care by improving and authenticating the delivery of services and by sharing records securely according to exact rules.

- There are early examples of the application of this technology in banking; for instance IBM and the French bank Crédit Mutuel Arkéa have recently completed a pilot project to improve the bank's ability to verify customer identity (Ref 30).
- The real potential, though, lies in the use of these advanced technologies to automate jobs. The impact of this, in the longer term, will be profound. The Guardian recently published an article, based on research done by Oxford University and Deloitte, predicting that by 2030 850,000 UK public sector jobs could be automated (Ref 31). The implications for Bracknell Forest Council are largely positive, in that it could reduce its costs, and the borough itself does not have high levels of the type of employment that will be automated away. There are huge implications for other parts of the country, though, not simply in the reduction of public sector jobs, but in their commercial sector equivalents, and indeed in such areas as transportation, where the driverless car will soon to be upon us – the UK has removed legal barriers to their adoption, the first country in the world to do so, and manufacturers expect 2020 to be the breakthrough year (Ref 32). These will be complemented by driverless taxis, lorries, and so forth. It will be the rate at which this automation happens, and the rate at which other jobs are created (if they can be) for the displaced workers, that will determine the short and medium-term benefits and dis-benefits. One thing is certain, however, these technological advances will continue whatever the outcomes, and it will be well to plan for the consequences. Thinking more parochially, it is unlikely that this technology will have a big impact during the next three years, but it will be important to track its development, and adopt it as and when it is of value.

6 CURRENT ICT PROVISION AND AREAS FOR IMPROVEMENT

- 6.1 As with every organisation, the state of the Council's ICT is a mixture of reasonably current, and somewhat behind. Few organisations achieve a situation where every aspect of the ICT operation represents current best practice, the important thing is to achieve a good match with organisational needs, and also to have a direction of travel and specific plans that meet the way the organisation is seeking to develop.
- 6.2 Drawing on recent independent assessment of the organisation's ICT (Ref 33), and the views of the authors of this report, it is possible to select a number of areas that are in clear need of improvement. Note that the ICT function is not in a poor state overall, it functions in a broadly satisfactory way on a day-to-day basis, with acceptable levels of reliable service delivery, a well-functioning help desk, and levels of user satisfaction (from a survey conducted as part of the 2016 Socitm evaluation) that is typical of a well-performing English Council. Nevertheless, the following areas are prime candidates for attention (not necessarily in order of importance):

- 6.2.1 Easy access to systems. Logging on via wifi even within the Council's buildings requires two-factor authentication, i.e. the input of both a password and a code from a security dongle. This is time-consuming, and unpopular with users. There is also a perception that wifi coverage is imperfect, meaning that most people still print documents when attending meetings, rather than just working from their laptop.
- 6.2.2 Another aspect of ease of use is the inability to access the network from outside, except on Council-supplier devices. This used to be an explicit requirement of the PSN (Public Sector Network) administrators, but it will be helpful to explore possibilities going forward for staff to access at least email and calendar from their non-Council devices, over the network. Longer term, as the Council moves to cloud-hosted email (see below), this will be possible. In the interim, the implications of re-using existing Citrix technology (which used to allow this access, before the PSN rules changed) will be explored, given recent changes in security policies within the Cabinet Office. If this approach is found acceptable, it will be adopted promptly.
- 6.2.3 The Council still uses the pre-2014 Government protective marking scheme (Protect, Restricted etc), and forces users to choose a classification level before sending an email. This should be updated to the current scheme (see Appendix E). This is far simpler to use, and in line with Government policy, places the emphasis for information security on the individual. This will represent a key change for the Council: treating staff as responsible, informed system users, not prisoners to over-restrictive systems engineered to guard information zealously and enforce particular behaviours.
- 6.2.4 The Council is behind the curve in its use of cloud technologies (see Appendix C). Having invested in a high-quality data centre in 2004, it has sought to maintain the on-premise hosting approach, on the basis that it needs to get the benefits from this substantial investment. The data centre will become end-of-life in 2020, when various major systems within it would need replacing, and it is important that a progressive move to the cloud is undertaken over the next 3 years, in good time for that 2020 deadline. Part of this will involve ICT staff accepting the logic of moving to the cloud, and embracing rather than resisting this move. This culture change – difficult as all such changes are – is nevertheless essential, as is the need to move on from the mentality of security lock-down referred to above.
- 6.2.5 Flexible and mobile working is a key theme for the Council moving forward, but solutions have not yet been put in place that meet all users' needs. A useful scheme has been defined, classifying users as 'fixed' (at the same desk each day, e.g. receptionists and P.A.'s), 'flexible' (able to work in the office, at home, or anywhere else), and 'free' (spending most times working out of the office, such as social workers). The policy of providing all with mobile devices has been adopted, and this is helpful in that even fixed workers may need to work elsewhere, to ensure Business Continuity in the event of buildings being inaccessible, weather problems, flu pandemic etc. However, the inconvenience of the two-factor authentication, the imperfect wifi, and (most pressingly) the need to properly understand the detailed needs of the free workers, and provide them with suitable equipment, means that the move to flexible and mobile working is not progressing as well as it could.
- 6.2.6 Telephony in the Council relies on a conventional Cisco Voice over Internet Protocol (VoIP) system (see Appendix F for an explanation of the technology). This has both handsets on the desk, and a specialist piece of software on the user's laptop. This approach allows calls to be taken in the office on the handset, or on the laptop wherever the user is (office, home, anywhere) provided he has connectivity and is

logged in. The laptop software also allows video-conferencing, if appropriately set up, and if the laptop has a camera, which is standard on more recent machines. In many ways, this is a telephone system that is in transition, and it does not work well for many users. The use of desktop phones, which users log into but then leave logged on, tends to cause users to occupy the same desk each day if coming into the office; this tends to discourage proper hot-desking. The working practice of using headsets, plugged into the laptop and used at work or at home, has not yet been introduced, and so staff will default to using the desk handset. Similarly desktop video conferencing is hardly used, and one reason for this is that while the technology supports videoconferencing among Council staff, the more universal Skype solution is not allowed, so users cannot videoconference with those in other organisations. The organisation needs to move out of this transitional phase, embrace the headset + laptop telephony approach, and support video-conferencing both internally and externally. Note that small and simple deskphone-like alternatives to headsets are available, so those clinging to this approach can be catered for – but they should still hot-desk like anyone else.

- 6.2.7 Mobile telephony, meanwhile, is currently addressed with Blackberries (now out of production and unobtainable), plus conventional mobile phones. The Blackberry solution allows email on the move, but is unpopular as the handsets are difficult to use, and there is a dual log-in process to get to email. An alternative approach using more up to date Samsung phones is being trialled; these will also allow email on the move. In addition, not all staff who need even basic mobile phones have been given them (in particular, some social workers), and are forced to use personal phones to meet the need. Clearly this needs to be addressed.
- 6.2.8 There is currently no standard equipment replacement cycle. For any organisation, it is essential to understand that IT equipment wears out, and needs replacing. The best approach is to define a fixed replacement cycle, and get to a situation where a consistent level of capital investment is planned for each year. Thus with laptops, conventional wisdom is that a high-quality machine will last for 4 years, and so procuring machines with a 4 year next-day-on-site support contract is the best approach. The alternative approach, of ‘sweating the assets’ and replacing only when beyond repair, is generally a false economy. It can lead to an estate of old equipment, periodically repaired or upgraded on an ad-hoc basis, with long log-in times, the inability to run more modern software, and dissatisfied users. When all costs are factored in, including staff time to do repairs and upgrades, plus the cost of spares, it is rarely cheaper, and is certainly a second-best approach guaranteed to lead to low user satisfaction. Similarly, all infrastructural equipment, of which there is a good deal, should have planned replacement cycles. Overall, the best approach is a steady, planned level of capital investment every year; the alternative approach invariably involves a long period of decay and then a huge catch-up investment – and then the cycle starts again.
- 6.2.9 The Council is still using the Windows 7 desktop operating system. Windows 7 is now quite old-fashioned, and will finally go out of support on the processors in the Council’s Dell machines on 14 January 2020, although even this support is only for “critical updates” (Ref 34). Newer PCs with the next generation of Intel microprocessors, code-named Kaby Lake, which will start shipping in the Spring of this year, and will only run the latest Microsoft operating system, Windows 10. A planned transition of the current estate to Windows 10 is therefore essential. Note that this involves more than just replacing PCs: all of the Council’s systems will have to be tested to ensure they run with Windows 10. Staff will also have to be trained in its use (although it is a fairly straightforward system to use).

- 6.2.10 The Council is still using Office 2010. Mainstream support for this software has already expired (meaning there will be no further improvements – Ref 35), but extended support (basically, fixing of any security issues) continues to 13 October, 2020. Again, a planned transition within the timescale of this strategy is essential. It will be appropriate to move the Office productivity suite to Office 365 during this period, since this cloud-hosted version of Office is now Microsoft's principal offering – they will be offering the latest features on 365 first – and it will allow access to email and calendar from any device, not just Council laptops. Note that the 365 suite also includes Skype for Business (a full videoconferencing and voice telephony solution), and the OneNote and Publisher software applications. Users able to access 365 from a range of devices, including PCs, Macs, Android smartphones, and Apple iPhones and iPads. While a move to Office 365 is clearly the way ahead (unless the Council decides to move to the main cloud alternative, the Google G Suite - formerly known as Google Apps), moving from on-premise Exchange email to 365 is a non-trivial exercise. Many thousands of organisations have made this move, and firms exist that specialise in supporting this move, but it will need careful planning and execution. Perhaps the biggest advantage of moving to 365 is that from then on, upgrades happen automatically, although the Council could defer those upgrades to allow it to plan for training, etc. Thus, there would be no more looming problems with the Office suite moving out of support.
- 6.2.11 The use of touch-screen laptops should be explored, as standard issue. They represent only a small increase in price, but Windows 10 is optimised for touch screen use, and it is very convenient when interacting with many applications, and scrolling through large documents, to be able to use a touch-sensitive screen. It may be that the taking of signatures, also needed for some functions in the field, could be achieved in this way.
- 6.2.12 The Council is still blocking webmail. At one time, many organisations did so, but societal norms have changes, and now most organisations work on the basis that personal use of webmail (Gmail, Hotmail etc) is reasonable, in moderation. Similarly, many people wish to occasionally do e-banking, buy food, purchase items from eBay, and so forth, and it is recommended that all these normal conveniences are allowed on Council systems. Abuse of this privilege is a management issue, not a technological one, and chimes with the trust agenda currently being adopted. Meanwhile the usual filtering of totally inappropriate websites should remain.
- 6.2.13 The laptops in use have their USB ports locked down, to prevent users inserting memory sticks (other than the encrypted devices supplied on request). While this policy may be considered prudent (the accidental loss of memory sticks holding sensitive data in unencrypted form remains a regular news item), such conveniences as plugging in a wireless mouse should not be blocked, by default.
- 6.2.14 While the Council uses multi-function device (MFD) printers, which allow printing, scanning, faxing etc. these are not set up for 'follow-me' printing. In such a system, users simply use the print command, then walk to any device, present their ID card or enter a pin, and get the printed output. This could be the nearest machine, or the one nearest the meeting they are about to attend, in another location. It is recommended that this approach be adopted (subject to the approval of a business case – although the costs should not be high) once the majority of staff move to the Time Square site (staff are currently split between Time Square and Easthampstead House), at which time there could be rationalisation of identity cards, site and door entry readers, card readers on printers, and so forth. The obvious solution would be

the adoption of the Council's e+ smartcard, which has a range of additional benefits (see Section 7.27).

- 6.2.15 The technology in the Council does not yet support paperless working very effectively, even though there is a clear demand among staff to work in this way. There are many aspects to this, including equipping all meeting rooms with large, high quality displays (with easy and rapid connectivity to laptops), ensuring that wifi is ubiquitous and especially that coverage is perfect in every meeting room, ensuring that users can easily get into their laptops (see above), promoting a culture of sending out all papers electronically rather than distributing some at the meeting, and creating documents that can be easily read on a laptop or meeting room display screen, rather than for instance giant spreadsheets that have to be printed on A3 paper. (Note that a 'Smart Meeting Room' system, with displays outside the room showing who has booked it and when, rules that allow unused rooms to be used within a defined period of non-occupancy, and some penalties to the no-show bookers, would be valuable).
- 6.2.16 User satisfaction with ICT is not routinely measured, except in the annual (sometimes biennial) Socitm survey. There is a clear need to track user satisfaction, to ensure that the ICT service is meeting user needs. This should work at a number of levels. Most organisations have a system whereby when a user has contacted the helpdesk and the call has been closed, they receive a simple on-line survey, to say whether their problem was solved promptly, did the helpdesk explain things clearly, how could things be improved, etc. Helpdesks usually report satisfaction of around 4 on a scale of 0-5, since users are generally pleased to have had their problem fixed. Many organisations also periodically check user satisfaction with a random sample of users (not just those who have contacted the help desk); this taps into broader feelings of satisfaction, can detect underlying issues that were not serious enough to warrant a help desk call but are still important, and can also elicit constructive feedback and suggestions on improvements. These surveys should again be brief, on-line, and steps should be taken to not ask select that user for the next n surveys, to avoid survey fatigue. Experience shows that this approach is very sensitive in tracking user satisfaction issues, and often elicits insightful suggestions on service improvement. Results should be published, ailing with improvement plans that the surveys prompt along the lines of "you said, we did". Finally, it will be important to poll all users to get a high-level satisfaction score (the Socitim 7-point scale works well), to both baseline satisfaction with the service as-is, and then track improvements achieved during the life of this ICT Strategy. Note that user expectations will tend to rise over time, as their experience of domestic ICT continues to improve, and the Council's ICT will, to a degree, have to 'run to keep still' in the light of this.
- 6.2.17 The ICT function does not yet use Business Relationship Managers, and this has proven to be of great value elsewhere. The BRM (or Business Partner) is a senior individual who serves as a bridge between ICT and other departments within the Council, understanding their strategic needs and direction of travel, advising on the art of the possible and best practice, reporting back into ICT to ensure that staff there understand the business, and so forth. The role is strategic rather than operational, but can serve as the final port of call if processes are not working and users are not getting what they need.
- 6.2.18 The ICT function does not currently communicate well with the business, and vice-versa. Users are not aware of technology improvements planned and are not able to easily give their input, and therefore rely mostly on personal contacts. ICT has a

good story to tell, and should communicate better via all the channels available, including the intranet, open days, a newsletter, posters, Twitter, Facebook, blogs by ICT staff, and so forth. Communication in the other direction is essential too, via the surveys described above, a suggestion scheme, local super-users (see below), social media, and once the team is in the Time Square site, such simple things as a white board for users to write on as they go past ICT.

- 6.2.19 A walk-up helpdesk is a useful part of any modern ICT function. The current arrangement in Easthampstead House does cater for this, but in an informal way. Once the ICT team has moved to Time Square, the usefulness of creating a full walk-up service should be explored. Users will be mobile, since all will have laptops, and it makes sense for them to be able to walk up to a counter, wait their turn as necessary, talk to someone, and either get an instant fix or leave their machine there. Many other organisations have adopted this approach to good effect: it drives up user satisfaction levels, gives a human face to ICT, and leverages the view that “the ICT team are great, once you find someone to deal with”. In parallel, the helpdesk should be seeking to minimise avoidable telephone or face-to-face contact, via digital channels, including more on-line advice of the ‘how do I’ type. This should extend beyond FAQs to brief You Tube videos, and could also tie in to periodic Master Classes to help users get the best from productivity or line-of-business applications. Some organisations call these ‘Lunch and Learn’ sessions, and attract users with a free sandwich lunch, while updating them on new developments and training them on the use of ICT systems.
- 6.2.20 User training is currently a part of project plans when new systems are developed, but there needs to be a more concerted effort to ensure that users get the best from the technology deployed. Many organisations use the ‘super-user’ approach, whereby a local enthusiast volunteers, gets extra training, possibly a small pay supplement, and serves as the local ‘go-to’ person for minor queries and fixes for that system. The reality is, though, that realising the benefits of any ICT system is a process that must run throughout the system’s entire life. New starters need the appropriate training, by whatever means (on-line training packages, ‘how do I’ videos, local super-user support, FAQs, etc). Even seasoned users may not be getting the best from the system, and periodic Master Classes, drop-in sessions with experts (brought in from outside as necessary), on-line help, and all the other means of imparting knowledge should be deployed. Part of the problem is deciding who owns the responsibility for this, and it is recommended that while every significant system has an owner, who not only ensures that upgrades are planned and executed, and keeps in touch with the supplier to understand their roadmap (all of which is done now), that system owner should also take the lead in ensuring that the business gets the best out of the system, by all the means outlined above. Planning for this should be part of the original project plan, within the Benefits Realisation element, and projects should not be signed off as complete unless this is organised. Monitoring of success could then be part of user satisfaction surveys, and also something that Business Partners take an interest in. In addition to the above, periodic checks with the supplier to verify that the system is configured to get the best from it, are most worthwhile. Many local authorities end up abandoning one major line-of-business system and adopting another, at great expense, because they have failed to set it up properly, or reconfigure it over time as their needs change, despite it being inherently capable of meeting their needs.
- 6.2.21 Project management in the Council mainly follows conventional practices (Prince2), and this is of proven value provided certain things are done: scaling to project size and complexity (so avoiding excessive documentation or process), a business case

(as a genuine decision tool, not a document of persuasion), a sponsor (who really cares about its success, and help in unblocking), a PID and plan (clear requirements and a defined solution: what will be done, how, when, and how the benefits will be achieved), a suitably able and experienced project manager, assigned resources, and appropriate management of risks and issues. All of this is essential on projects of size and complexity, and must be done, if in a lightweight way, even on smaller projects. Note that there are certain classes of project that lend themselves to the Agile approach, which involves incremental development against generally unclear requirements, on a short cycle (typically 2 week 'sprints'), with ample user testing, and a 'fail fast, fail often' philosophy. This works well on projects that produce very visual, easily testable outputs (websites are a good example), and can develop incrementally and still be useful in a part-finished form. It does not work on all projects, although certain elements of the Agile approach (such as daily or weekly "standups", and the philosophy of "show and tell") can be useful in all projects, and indeed in general management, in keeping the whole team updated. The creation of a project management community across the Council would be valuable, in sharing best practice, and learning from each other: project management expertise is best gained by doing, but vicarious experience is still of value (Ref 36).

Shared Services

6.3 On a larger canvas, there is no extensive use yet of shared services within ICT in the Council, except for sharing of bulk printing with Wokingham Council. Other parts of the Council are moving into shared services, including Regulatory Services (now operational in a shared service), and Legal (in the planning phase). The move to shared services reflects a trend across local government, born mainly of necessity. While it is not an easy road in any area, and it seems especially ICT, a number of organisations are now making a success of shared ICT, for instance Tri Borough in London (Ref 37) and the more recent collaboration between Camden, Haringey and Islington. The lessons that have been learned so far (Ref 38) include that due regard must be given to political relationships, the quality of advice sought and received, accountability among officers, the robustness and clarity of the business case, the building of trust, definition and communication of the vision, and the attainment and preservation of momentum. While bearing all this in mind, and accepting that achieving ICT shared services will not be easy, it would be sensible to explore the possibilities with like-minded Councils in the area.

Accommodation

6.4 The implications for ICT of most Council staff moving from two buildings to one (as described in Section 2.5 above) need to be explored, in the context of the timescales of this strategy. Currently vital elements of the infrastructure are shared between Time Square and Easthampstead House, and once they are consolidated into one building, resilience and DR (disaster recovery) capability will be lost. Thus, for instance, the SAN (storage area network – the main data storage system) is currently mirrored in real time between the two sites, over a high-speed network. This ensures that if one site goes down, data is preserved and is still accessible. In the future, it will be necessary to share data with another site, and an obvious contender would be another local authority in the same part of the world, although if that proves not to be viable, an alternative would be a cloud-based solution.

7 ICT: A VISION FOR 2020

Taking account of all the above, a succinct view of how things could be in 2020 may be summarised as follows:

- All staff are ICT-enabled to work productively wherever needed: the office, a resident's home, another public sector organisation's site, a cafe, their own home, etc. In short, "work is a thing you do, not a place you go".
- Staff are enabled to provide a service to customers where it is most effective for them, rather than for the Council.
- Travel time, dead time and duplication of effort are minimised.
- All line-of-business systems are best of breed, consolidated where appropriate (for instance there may well be a single social care system), up to date to the supplier's latest version (or a maximum of one version behind), fully patched, and usable across all devices, remotely as well as in the office.
- All organisational data is timely and accurate, with data sharing arrangements in place with other public sector bodies (possibly via a cloud-hosted data hub)
- Partnership working and shared services at Bracknell Forest with other organisations has continued to grow, in areas including the Multi-Agency Safeguarding Hub (MASH: the single point of contact for all safeguarding concerns regarding children and young people living in Bracknell), Public Health, NHS, Police, etc. Employees of all these organisations are able to access BFC equipment and systems and vice-versa. The Connected Care solution currently being developed with the Health Service will be of major importance, allowing the sharing of information about a patient's medical condition across subscribing health and social care organisations across Berkshire.
- The Council is exploiting the power of BI to understand performance, gain insights, make decisions not otherwise obvious from past approaches to data analysis
- Data is open by default, subject to legislation on privacy etc.
- Interaction with residents is primarily digital and self-service, and the Council is 'digital by default'. Digital services are so compelling and easy to use that customers use them as their primary channel for interacting with the Council.
- Call centre operations are multi-channel (including video), with easy load-sharing across teams, and effective real-time performance monitoring.
- Staff interaction with administration systems is via digital channels, from anywhere, anytime, and again are so easy to use that time spent on these administrative tasks is minimised.
- Shared services: by 2020, possibilities have been explored with other local authorities, lessons learned from successes and failures elsewhere, a coherent decision has been made on whether to follow this path, and if it has, significant progress has been made.

- The Council is embracing advances in technology that are starting to automate some roles, as they become available. This includes the uses of AI for on-line and verbal communications, for initial interactions and sometimes complete transactions. Early exploration of blockchain is under way.
- The e+ card has been adopted as the staff identity card. It is used for building access, log-on security, follow-me printing (although the Council is now mostly a paperless organisation), cashless vending, plus all the local citizen benefits (discounts in shops, etc).
- All meeting rooms are equipped with conference-call phones, video cameras, microphones, and display screens. Laptops can be easily connected to allow meetings with those present, or those joining remotely, by video or voice only.
- Staff collaboration across the organisation, including with staff working remotely, is enabled by multiple channels, including chat, cloud-based collaborative tools (with staff free to experiment with and adopt solutions of their choosing, subject to simple information governance rules and ICT approval).
- A move to the cloud is largely complete. Office 365 has been adopted, and all laptops are on Windows 10. The majority of applications are cloud-hosted.
- Staff are supported in getting the best from their technology, via multiple means (training classes, on-line training, YouTube clips for "how do I?", master classes, lunch and learn, hints and tips, local super-users, service desk support, etc).
- The Council is known as having high quality, up to date technology, which works well, and which staff exploit to the full. User satisfaction is maintained at a high level.

8 PROPOSED WAY AHEAD: WORK UNDER WAY AND SHORT TERM PLAN

Work now under way

- 8.1 Under the Mobile Technology Solutions Programme various departments in the Council have been trialling different technologies solutions. The trials included iPads (wifi only, and 3G enabled), hybrid tablets (i.e. with detachable screens), and mifi dongles (dongles that connect via 3G or 4G to the internet, then re-broadcast over wifi locally). Laptops were upgraded with solid state disks to improve their performance, and rolled out across Council departments including Children’s Social Care teams, Learning and Development, Members and Senior Officers and Building Control.
- 8.2 A review of the proof of concept/trial in the form of a Lessons Learned summary can be found in Appendix G, which details what went well, what went less well, and what are the challenges for mobile and flexible working moving forward. Some key challenges noted are listed below:

Challenges	Action/Consideration
Culture change around new processes	The Organisational Development Strategy managed under Transformation

	Programme will address challenges around cultural change.
Culture of trust of staff	The Organisational Development Strategy managed under Transformation Programme will address challenges around cultural change.
EDRMS not available for all areas	The Council's Civic Accommodation Programme is now governing the action plan developed from the Electronic Document Records Management Systems Strategy which was conducted by external consultants iESE in 2016.
Right applications	It is necessary to ensure the right applications are used in the field, noting that some do not have dedicated mobile solutions, and therefore the full client software may needed on the device itself.
Internet access	Improvements to BFCs internet capacity are required, as current bandwidth is limited and a progressive move to cloud will require ever greater bandwidth.
Battery power	Clearly mobile devices in use for a whole day with 'free' workers must have adequate battery life. If necessary battery booster packs and car chargers may need to be deployed.
4G as standard	Coverage in the area covered by the Council is now good, but it is important that 'free' staff have connectivity in the areas they cover, or the ability to save data locally and sync when back in coverage.

Technology Currently Deployed

8.3 End User Equipment

Fixed Workstyle

- Desk based PC
- Cisco Desk phone with Cisco voicemail
- No email on the move
- No mobile phone

Home-Flex Workstyle

- Laptop - Docking station in the office
- Cisco Desk phone with Cisco voicemail
- Mobile phone with voicemail
- Some may have mobile email with a Blackberry handset

Free Workstyle

- Laptop – Docking station in the office (some are trialling hybrid tablets, i.e. those with a detachable keyboard)

- Cisco Desk phone with Cisco voicemail
- Mobile phone with voicemail
- Some may have email on the move with a Blackberry handset

8.4 Infrastructure

- Networks and Telephones: Cisco
- User Directory: Microsoft Active Directory
- Server Virtualisation: VMWare
- Storage Area Network (SAN): Dell
- Application Virtualisation: Citrix
- Appendix H depicts each layer of infrastructure that is currently being used, in a graphical form.

8.5 Time Line of Key Dates: To change in a cost-efficient manner, it is important to note that there are significant dates that will influence key decisions and the timing of them. As significant investment has already been made on infrastructure and key systems, it is prudent to align any changes to match the natural refresh cycle of these, at contract end dates. The most important of these are Windows 7 and Office 2010, the Storage Area Network (SAN) and Citrix. Appendix J depicts key renewal dates and End of Life (EOL) dates for corporate infrastructure and software and systems, while Appendix K depicts key renewal dates and EOL dates for line of business applications.

Short-term plan: Jan 2017 to Jun 2018

8.6 The short-term plan is about improvements to the current ICT environment that could be commenced in the next 18 months without major change or investment.

8.7 End User Equipment

- Laptop: Standard laptop; can be docked in the office with a standard screen, keyboard and mouse or used remotely via a VPN for connection back to BFC. Existing Home-Flex users will have the hard disk upgraded to SSD for improved performance. All new laptops would be purchased with an SSD as standard.
- Hybrid Tablet: The same functionality as the laptop with the addition of a detachable keyboard, touch screen, stylus and Windows 10 and SSD Hard disk. Battery performance needs to be sufficient for working in the field.
- Phone: Soft phone which uses Cisco Jabber software installed on the laptop or Hybrid. This requires a USB headset and microphone. This negates the need for a physical desk phone.
- Email on Move: A small device such as a smart phone or Blackberry that provides email on the move. Users should have only one voice mail account.
- Voicemail: Voicemail is used to leave messages when the phone cannot be answered. This can be either on the internal phone system (Cisco) or with the Mobile phone provider.
- Instant Messaging (IM): Cisco Jabber provides IM for collaboration in terms of instant messages and “presence” which displays for each user if they are on-line and available, busy, or off-line. This also allows ‘group chat’ where more than two

individuals can be part of the messaging session, video conferencing and screen sharing.

Alignment of suggested ICT equipment to each work style

8.8 Table One below maps technology to work style

Work style	Computer	Phone	Mobile (Voice only)	Email on Move	Voicemail
Fixed	Laptop	Soft Phone	No	No	Cisco
Home-Flex	Laptop	Soft Phone	No	Possible	Cisco
Free	Hybrid Tablet	Soft Phone	Yes	Yes	Mobile

Table One: Technology and Workstyle

8.9 These are default options. There will be exceptions, i.e. some Home-flex users may need smart phones, some free works may only need a laptop and not a Hybrid, Senior Officer Home-Flex users may prefer Hybrid for meetings, etc. Some users such as PAs and contact centre staff require access to more than one phone line which is currently not supported by Jabber. Therefore they would still need a desk phone in the short-term.

User Equipment Strategy

8.10 It is important to have a strategy for user equipment, to align with the aims of the organisational transformation, and the future accommodation for staff.

- All fixed and home flex users to have laptops to promote flexible use of desks. It will be necessary to consider the storage of devices when not used, for instance lockers i.e. Lockers.
- All free workers to have appropriate devices; type to be determined on the basis of trials.
- Universal docking stations to be on all desks.
- All desks to be dual-screened (19 inch screens, aspect ratio 16:9).
- All underperforming laptops and remaining PCs to be upgraded to SSDs in the interim, and then to be refreshed as part of the four-year cycle.
- Ensure all corporate apps work on Windows 10
- Determine feasibility of upgrading older laptops to Windows 10
- All new laptops and free worker devices to have built-in cameras.
- ICT equipment will need to accommodate smaller desk sizes, post Time Square migration.

Collaborative Working Strategy

8.11 Collaborative working will be a key aspect of future working within the Council, both among Council staff and with colleagues in a range of other organisations. The strategy for achieving this is as follows:

- Deployment of the new intranet solution, providing a means whereby information from right across the organisation is readily available, well presented, and always up to date. Links to training materials, hints and tips, 'how do I?' videos, sources of knowledge (including the best person to consult), and a range of other resources will be available to help users not only get the best out of the technology, but work more closely and effectively together.
- All users to use Jabber for Instant Messaging – as users could be working flexibly this is an ideal way for people to communicate. (Automatically launched at start-up and single-sign-on enabled). This is required to give all users "presence".
- Use Group-Chat for meetings of more than two internal people as users could be working flexibly and would save time, travel costs and reduce the occupancy of meeting rooms.
- For enhanced internal meetings use of the video conferencing feature within Jabber. This is useful for remote 1-2-1s. Skype to be considered as a corporate alternative (or addition), to enable easier video conferencing with external organisations.
- Allow users to share their screens with colleagues using Jabber, to enhance collaborative working.
- Evaluate the usefulness of Jabber Instant Messaging being available on smart phones as a Mobile App for free workers; this would require investment in a new gateway.

Telephone Strategy

8.12 Move away from Cisco physical telephone handsets on desks to soft phones (Jabber & USB headset) for all users. A pilot is currently underway with 22 employees. All Fixed and Home-flex users to have a voicemail account on the internal phone system. Mobile workers will use voicemail provided by mobile phone operator, and it needs to be determined whether the provision of a voicemail account on the Cisco system will be of value; the alternative may be to auto-forward voice calls to their Cisco number to their mobile phone, when if unanswered it would go to mobile voicemail. This can be determined in consultation with flex workers, and it may be that different teams need different solutions.

Mobile Phone Strategy

8.13 The following represents the mobile phone strategy for the Council

- Fixed and Home-Flex workers will not require a mobile phone, since they will have access to the VoIP system via their laptop and headset. It is now common practice in organisations for staff to use their personal mobile phones for business calls, on the basis that they receive more call-minutes than they can ever use up, and anyway would not want to carry two mobile phones. Provided their role does not lead to the receipt of sensitive calls that might go to voicemail, there is no

reason to discourage this practice, on the understanding that the Council will not subsidise their personal phone contract.

- Smart Mobile phones for all Free Workers to allow email access (a small number of Home-Flex users may also require Smart Phones on an exception basis, but this should be based strictly on business need).
- Free workers will have voicemail from the mobile phone provider, and so as explained above there may not be a need for internal phone system voicemail.
- All users to have an “Extension Number” which will be diverted to Free workers’ mobile phones.
- Whether users want their phone numbers to be publicised or withheld is a matter to be decided on the basis of business need. While the Council may wish to default to openness and accountability, some roles may be such that citizens should be in contact with a service rather than an individual, and so publishing individual numbers may not always be appropriate. These issues will be resolved as part of the Customer Contact Strategy (Ref 14).
- All mobile phones or devices with mobile SIMS to be 4G as default, and 5G to be adopted as it becomes available (currently predicted some time in 2020).
- Mifi devices to be shared by teams where possible.
- Mobile connectivity for Free Workers can be achieved by a number of means, including mifi devices, SIMs in their laptop, or tethering their laptop to a mobile phone. More work is needed to examine local needs, and it may be that different teams warrant different solutions.

8.14 The corporate mobile phone contract currently with Vodafone is due for renewal in January 2017. Vodafone now offer a corporate 4G ‘data bucket’ as opposed to each SIM having a monthly 4G data allowance. This would result in significantly lower charges. Also given that Home Flex workers do not need mobile phones, since they can use the soft phone solution described above, this could offer a saving in the reduced number of mobile phone contracts that are required, although it will be necessary first to ensure that all staff who need mobile phones are given them, which is not yet the case in the Council.

Network Strategy

8.15 There is a need to ensure enough wifi / internet capacity with the increased numbers of laptops being used and increased flexible working planned for delivery Q1 2017. It will also be essential to ensure the internet connection has enough capacity with the increased number of laptops connecting in remotely and for an increase in cloud computing which is planned going forward. It will also be necessary to explore the options for suitable guest wifi access for non-BFC employees, for instance agency staff, consultants, shared service staff etc. It is now an expectation in the corporate world that guests in an organisation should have easy (albeit password protected) access to a good internet connection.

Mobile Connectivity Strategy

8.16 The strategy in respect of achieving network connectivity via mobile devices is as follows:

- The current Blackberries, which are now out of production will be replaced with a standard smart phone (probably the Samsung J5) with 'Good' software to allow secure email on the move. This therefore replaces the functionality of the Blackberry with a more modern, more usable and cheaper device.
- Technical investigations will be undertaken to determine whether it will be possible to use an email client on a smart phone, and not have Good or MDM at all.
- It is proposed to eliminate the need for users to log in when working remotely by using the Vasco tokens. The technology to achieve this is in trial at the time of writing. There are obvious advantages in user convenience, and a saving in the cost of tokens going forward. (Note that Adult Social Care will have a rollout of new mobile devices – laptops or hybrids – in the Spring, and it will be helpful to have a non-Vasco solution in place by that time).
- Member needs are often somewhat different to those of officers, and so these will be kept under review going forward.

Service Delivery Strategy

8.17 To support the Council Wide Support Services Transformation project:

- Develop Self-service user portal for vFire Helpdesk.
- Support the development of a self-service element of the intranet.
- Automation/work-flow of key processes where possible: Service Requests, Change Requests, Work Requests, etc.

Print Strategy

8.18 To support efficient and cost-effective printing, a number of things need to be done. It should be noted that the Council should seek to become as near paperless as possible, and this will become easier as the ICT improvements proposed in this strategy play out.

- High volume print jobs to be sent to the shared print service at Wokingham while Multi-Functional Devices (MFD) are used for low to medium print jobs internally.
- PrinterLogic software used to allow printing from computers to any MFD on the network. It currently automatically displays a list of all the printers on the current floor and at a click will install the drivers, however any other printer can be manually selected and the drivers automatically installed if required. It is possible to add floor maps to this software so that users can easily see the location of all printers, and this will be implemented as a prelude to full follow-me printing, which will be investigated in the context of the Time Square move.

Social-media Strategy (ICT Infrastructure)

8.19 Social media have, over a relatively short number of years, become a part of the personal lives of many people, and also a valuable business tool.

- Social media can be used by BFC to communicate to large groups of residents. There is already a Social Media Strategy being developed by the Chief Officer for Customer Services.
- ICT must underpin and support the technologies that are required to support this strategy, for instance allowing connectivity to social media apps such as Facebook, Twitter, and Instagram.

Social Digital Interaction Strategy

8.20 Technology now enables communication via a wide range of channels, and these should be explored to determine their value to the business in communicating with citizens.

- Social digital interaction is where a social worker for example would carry out an interaction with a client utilising social technologies with communication capabilities (e.g. Skype, FaceTime, WhatsApp).
- ICT need to investigate these technologies and where possible support access for staff to interact with clients. This has the dual benefits of reduced travel time/costs and the client being more comfortable. However, there must be clear and well thought through policies around their use to protect all concerned.

Organisation Development Strategy and Communications Strategy

8.21 New technology has much to offer, and as is well known, using it effectively in business environments involves much more than just making the technology available. Staff have to be trained to use it effectively, and its use has to be incorporated into business processes in a fashion that supports the outcomes the Council wishes to achieve, while bringing staff along on the journey of discovery and building their skills appropriately.

- The use of different equipment and working in different ways is a significant cultural change for the organisation, and staff will need to be supported through the Organisational Development Strategy to make these changes.
- The development of a communications and engagement plan is also needed to raise the awareness of the strategy and gain valuable user engagement to inform the business requirements that will shape the strategy.
- Key stakeholders will need to be identified and targeted communication and engagement will be needed for different groups.
- There is the potential to use the ICT Business Partners being defined within the Target Operating Model for Council Wide Support Services currently being undertaken to help form and shape the strategy. These roles should be in place by the autumn of 2017.

Document Management Strategy

8.22 Information is the life-blood of any modern organisation, and ICT has both enabled the creation of information and must take responsibility for the proliferation and poor control of vast quantities of information, sometimes out of date, sometimes hard to locate, and often not best placed to facilitate timely and effective decision making.

- The Civic Accommodation Programme is now leading on the Document Management Strategy, looking at the needs of the organisation to ensure suitable solutions for all document management needs are considered. This covers all aspects from requirements, policies, best practice etc.
- Modern.Gov is proposed as the default application to be used for to manage meetings, hold minutes and agendas, and allow the on-screen annotation of these documents. This works well with the touch screen hybrid tablets being used in meetings by officers. (Note: support for Modern.gov is currently being reviewed to ensure that there is capacity and capability to support the wider use of the product).

Meeting Room Strategy

8.23 The provision of well-equipped meeting rooms is essential to the operation of a modern organisation, and a key enable in flexible working. Features such as easy on-line booking, displays outside meeting rooms showing who has it booked and over what period, agreed rules on taking over rooms if those who booked do not arrive, and the provision of non-bookable rooms, plus breakout areas, social learning spaces, and small booth-like areas to allow confidential discussions, are all standard practice in modern organisations. Similarly, the bookable meeting rooms should have a screen and projector (with easy and quick connectivity to a laptop, to allow the meeting papers and presentations to be projected), a conference-type phone, and ideally video cameras to be hooked in via Jabber or Skype.

Microsoft Enterprise Agreement

8.24 Currently, BFC has an Enterprise Agreement (EA) which covers basic licencing required under Microsoft's terms and conditions to use key software such as the operating system, server access and key applications such as email and calendar. This agreement is due to expire in June 2017 and forms one of the key decisions referred to above.

8.25 Options exist to either renew like for like or change the coverage of the licence agreement to include the cloud-based version of Microsoft Office (Office 365) and of course alternative cloud-based software/solutions. Given the timelines this needs further investigation and analysis in the short-term to determine the costs and benefits, and will be reflected in the medium and long term strategies in due course.

Protective Marking

8.26 It is proposed that the Council adopts the current Government protective marking scheme; details are in Appendix E. Currently, when emails are sent staff they must be individually marked with an 'email classification': Unrestricted, Protect, Restricted. A pop-up asking for the user to select an option automatically appears when the officer presses the send button in Outlook. It is proposed to remove this, and leave it to the information owner to mark as OFFICIAL SENSITIVE if they see fit; note that the default level of OFFICIAL requires no marking.

e+ Card

8.27 It is proposed to investigate the possible use of using the Bracknell Forest e+ card for the following areas;

- Used as a primary form of identification – Staff Identity Pass
- Allowing access via the door entry system. This can also be used as a safety measure during building evacuations, whereby a list of those who have entered but not left the building, in other words those who will be part of the crowd in the assembly area, is automatically created and sent to responsible staff by email, so that they can (on their mobile devices) identify who has left, and ensure that no-one has been left behind.
- Allow ‘follow-me’ printing where a user can swipe the card at any MFD on the estate to retrieve print jobs, with no need to enter username and pin.
- Use of the card will also allow all Council employees the range of benefits associated with the e+ card, around the borough.

9 PROPOSED WAY AHEAD: MEDIUM TERM PLAN: JULY 2018 TO JUNE 2019

- 9.1 The medium-term plan consists of improvements to the current ICT environment that could be commenced after the short-term plan without major change or significant investment. It is essential that the medium-term strategy is continually reviewed and developed to ensure that it reflects the business requirements in terms of supporting Mobile and Flexible working, Self-service, and digital enablement as the Council evolves under the Transformation Programme and additionally as technology changes frequently.
- 9.2 There are three main options that could be undertaken, in respect of the use of the Council’s data centres, of which there are currently two (a primary at Time Square, and a secondary at Easthampstead House):
- Continue with BFC Managed Data Centre: Stay with the current model of utilising the Council’s owned and managed datacentre in Time Square to host servers and services. It is a well provisioned and high quality data centre and significant investment has already been made in terms Storage Area Network (SAN), Virtual servers (VMWare), backup power supply via battery, and backup diesel generator. Note however that much of the equipment will be end-of-life in 2020.
 - Part Cloud: Still retain the Data Centre at Time Square and on a case by case basis migrate individual applications to the cloud to reduce the datacentre footprint, e.g. Cloud Client Apps, Line of Business Apps, etc.
 - All Cloud. There would be no advantage, and significantly more cost, in abandoning the existing data centre rapidly and simply hosting all our existing systems in someone else’s data centre (the IaaS cloud model explained in Appendix C). A more appropriate approach would be to work with applications software suppliers, i.e. those firms that provided the several hundred software solutions used by the Council, and understand when they will be providing cloud-hosted versions of their applications, and then move to their cloud-hosted systems in a measured way. Ultimately, this would result in an all-cloud solution, and the data centre (by then nearly empty) could simply serve as the end-point to the various internal and external networking solutions used by the Council.

- 9.3 In line with third option outlined above, cloud options are currently looked at within the current procurement process and reviewed and evaluated on a case by case basis. Examples of applications already in the cloud are: Firmstep, MyChoice, MyLearningSpace, Frontline, and Huddle. However this approach will be strengthened by expecting Cloud to be chosen by default, unless there is a compelling reason to host on-site.
- 9.4 A key corporate system to migrate to the cloud is email and calendar which could allow for BYOD (Bring Your Own Device), although this might require a second authentication factor (which could be a code sent to an app on a mobile phone). However, further investigation is required to determine the implications for GSCx mail, which might have to be handled separately. The likely cloud-based solution is Microsoft Office 365, although alternatives would include Google G Suite. The Microsoft Enterprise Agreement has a significant impact in this area (see above).
- 9.5 Note that the loss of the Easthampstead House data centre, which is used to mirror data from the SAN in the Time Square data centre, will require a new solution (as explained in Section 5.4 above). Shared services with another Council are an option.
- 9.6 Continuation of the short-term strategies: The individual strategies outlined in the short-term strategy are listed below will not on the whole change but will need to be periodically reviewed. However there are some areas noted below that have already been identified as requiring a review to support the medium-term strategy:
- Collaborative Working Strategy
 - Telephone Strategy
 - Mobile Phone Strategy
 - Network Strategy
 - Mobile and Flexible Working Strategy
 - Service Delivery Strategy
 - Print Strategy – Will need reconsidering if after the consolidation to Time Square printing requirements change.
 - Social-media Strategy
 - Communications Strategy
 - Document Management Strategy – Will need reviewing to include outputs from Document Management Strategy
 - Meeting Room Strategy – Will need reviewing to include outputs from the Civic Accommodation Strategy

10 LONG-TERM PLAN: JULY 2019 TO DECEMBER 2020

- 10.1 The long-term plan is about improvements to the current ICT environment that could commence after the medium-term plan, and which would require major change or significant investment. It is essential that the long-term strategy is continually reviewed and developed to ensure that it reflects the business requirements in terms of supporting mobile and flexible working, self-service, and digital enablement as the Council evolves under the Transformation Programme, and additionally as technology changes frequently.
- 10.2 Cloud by default: The main option is, as outlined in 8.2 above, to completely migrate to the Cloud for all applications and infrastructure. This will drastically reduce the

datacentre footprint, although it is still possible that some limited services will need to be kept locally. Further investigation is needed to see if this can be avoided. To achieve this, the following timescales should be noted;

- 2016-2018: review options
- 2018: major decision point (to allow time to plan for potential change)
- 2019: major change point (as contract or services become end of life)

10.3 Note that from mid-2019 onwards key infrastructure components are due for renewal or replacement, i.e. the Storage Area Network (SAN), Windows 7 and Microsoft Office 2010 becomes end of life, followed by the current version of Citrix going end of life. Therefore 2019 would be a key point in time to change (if required) and due to the complexities and planning involved, a decision would have to be made in 2018 to allow time for change prior to the 2019 timescale. Please refer to Appendices J and K for the timelines in respect of both corporate systems and business applications.

10.4 In addition it is important to note that there would be a change of charging model – cloud solutions are subscription-based and are normally charged per user/per month, and are therefore revenue-based rather than the current capital-based server model. This would need to be worked into the financial plans, going forward.

10.5 Continuation of short-term strategy: The individual strategies outlined in the short-term strategy and listed below will not on the whole change, but will need to be periodically reviewed. However, there are some areas noted below that have already been identified as requiring a review to support the long-term strategy:

- Collaborative working strategy
- Telephone strategy
- Mobile phone strategy
- Network strategy
- Mobile and flexible working strategy
- Service delivery strategy
- Print strategy
- Social media strategy
- Communications strategy
- Document management strategy
- Meeting room strategy

11 NEXT STEPS

11.1 If this ICT & Digital Strategy meets the approval of the organisation, it will be necessary to create suitably detailed plans to implement it. This will be best achieved by working at a number of levels.

11.2 First a detailed 'roadmap' should be created. This is a time-line representation of the key deliverables over the period of the strategy, expressed in an easily understood, graphical form. Given the complexity of the work, it is helpful to have several timelines, typically relating to end user devices and associated services (which allows staff in the Council to see 'what is in it for them'), another relating to line-of-business applications, and another relating to the underpinning infrastructure, which will be of

most interest to the technologists, but helps in determining dependencies between the multiple layers.

- 11.3 The delivery of each item on the time-lines then needs a requirements statement, an initial definition of the technical solution, and an expression of any dependencies on other items in the roadmap (if there are any). A rough estimate of costs and staff resources is helpful, as is a view of any special risks known at this time.
- 11.4 It will now be possible to draft a programme MasterPlan, showing how all the projects flow over time, how they are interlinked in terms of dependencies, and how resources will need to be deployed. An appreciation of any scarce skills is helpful, to ensure that key staff do not form bottlenecks in the execution of the programme.
- 11.5 Each project should only be approved on the basis of an approved Business Case, which includes an analysis of the costs, the benefits, the risks of the various options proposed (including a 'do nothing' option), and a reasoned argument leading to a recommended way forward. Each project should then be undertaken, using project management techniques appropriate to its type, be that Agile or traditional.
- 11.6 It should be noted that this strategy, and the programme of work that flows from it, should be periodically reviewed, and updated as necessary. Many things can change in unpredicted ways, including technology, business needs, and of course the broader local government environment. The ICT & Digital Strategy should change accordingly.

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APPENDIX B: GARTNER'S TOP 10 TECHNOLOGIES FOR GOVERNMENT

B1 To enable government transformation initiatives, Gartner (Ref 3) has identified the top 10 strategic technologies for government in mid-2016 and provides recommendations to CIOs and IT leaders regarding adoption and benefits. It is not a list of what government CIOs spend the most time or money on, rather it is a list of strategic technologies where Gartner recommends they should have a plan for in the future.

B1.1 Digital Workplace

The government workforce is increasingly populated with digitally literate employees, from frontline workers to top-level executives. The digital workplace is a business strategy to boost employee engagement and agility through a more consumerised work environment. The digital workplace promotes collaborative work styles, supports decentralized, mobile work environments, and embraces employees' choice of technologies.

B1.2 Multichannel Citizen Engagement

Delivering an effective citizen experience requires a holistic approach to the citizen: (1) using data to capture and understand the needs and desires of the citizen; (2) leveraging effective social media and communications to actively engage citizens; (3) allowing the citizen to engage on his or her own terms; (4) understanding the citizen's preferred engagement channels; (5) affording seamless transitions among channels; and (6) ultimately delivering a more satisfying set of citizen interactions. Adopting a citizen-centric information management strategy with multichannel citizen engagement opportunities will deliver quantifiable benefits.

B1.3 Open Any Data

Open any data in government results from "open by default" or "open by preference" governance policies and information management practices. These make license-free data available in machine-readable formats to anyone who has the right to access it without any requirement for identification or registration. Open data is published as collected at the source ("raw") at the lowest granularity, as determined by privacy, security, or data quality considerations. Open data is accessible with open APIs (application programming interfaces, i.e. the means of accessing an application and, in this instance, extracting data automatically), and is not subject to any trademark or copyright.

B1.4 Citizen e-ID

As government becomes more digitalized, digital identity will need to become more reliable to serve as the core for all digital transactions. Citizen electronic identification (e-ID) refers to the orchestrated set of processes and technologies managed by governments to provide a secure domain to enable citizens to access these core resources or services. Governments should require online authentication and identity proofing, because in-person verification methods are becoming outdated for offering citizens integrated and seamless access to resources and services. This "no wrong door" business model must be able to associate each citizen with one unique and persistent identifier within the bounds of what is culturally acceptable and legally permissible.

B1.5 Analytics Everywhere

Analytics is the collection and analysis of data to provide the insight that can guide actions to increase organizational efficiency or program effectiveness. The pervasive use of analytics at all stages of business activity and service delivery — analytics everywhere — allows leading government agencies to shift from the dashboard reporting of lagging indicators to autonomous business processes and business intelligence (BI) capabilities that help humans make better context-based decisions in real time.

B1.6 Smart Machines

In practice, smart machines are a diverse combination of digital technologies that do what we once thought only people could do. While capabilities are evolving rapidly, it already includes deep neural networks, autonomous vehicles, virtual assistants, and smart advisors that interact intelligently with people and other machines. Government IT leaders must explore smart machines as enhancements to existing business practices, and possibly as foundations for new public services or ways of accomplishing business goals altogether.

B1.7 Internet of Things

The IoT is the network of physical objects (fixed or mobile) that contains embedded technology to communicate, monitor, sense or interact with multiple environments. The IoT architecture operates in an ecosystem that includes things, communication, applications, and data analysis, and is a critical enabler for digital business applications in all private-sector and public-sector industries. The business use cases and adoption rate by government agencies vary according to service domain or program mission. Government business models are emerging that take advantage of the IoT; for example, pay-for-use or subscription-based taxation models, smart waste bin collection on city streets, and the remote monitoring of elderly patients in assisted-living settings.

B1.8 Digital Government Platforms

Governments face constant pressure to improve service delivery and save costs. Digital platforms reduce effort and facilitate user-centric design. These platforms deliver services such as payments, identity management and verification, reusable application services and notifications (for example, SMS and email) that are commonly used across multiple domains. Globally, governments are taking a platform approach to simplify processes, improve citizen interaction, and reduce expenditure.

B1.9 Software-Defined Architecture

Software-defined architecture inserts an intermediary between the requester and the provider of a service so that the service can change more dynamically — in other words, it is the IT equivalent of changing the tyres while the car is moving. Adding a layer of software to abstract and virtualize networks, infrastructure or security has proved to be a useful way of deploying and utilizing infrastructure. Applying the same technique to software architecture improves the manageability and agility of the code so that the organization can respond to the fluidity requirements of digital government and the IoT. Some government organizations have begun implementing software-designed infrastructure, but most are still operating in traditional data centers.

B1.10 Risk-Based Security

The cybersecurity threat environment is constantly evolving, but it represents only one dimension of a complex, multifaceted set of threats and risks. Government CIOs must adopt a threat-aware, risk-based security approach that allows governments to make knowledgeable and informed decisions about risks in a holistic fashion, allowing for a

wiser allocation of resources; more sound decisions about risks and their impacts on government missions, operations, assets and people; and engagement of senior leadership in risk-based decisions.

APPENDIX C: CLOUD TECHNOLOGY AND ITS ADOPTION BY THE COUNCIL

What is 'The Cloud' and Who Is Using It?

- C1 Many years ago, network engineers used the term 'cloud' as shorthand to describe a network of unknown characteristics, and drew it on diagrams as a cloud-like shape. In more recent times, technology has developed such that an external organisation can, with huge economies of scale, create a data centre (or more likely, multiple data centres) full of computing power, and offer that power to customers on a commodity basis. Customers achieve access over the internet, or sometimes dedicated data lines they install. Thus, Google can today offer data storage (one of their many computing offerings) at prices far below those that any ordinary organisation could achieve for themselves. The cheapest Google Cloud storage, at the time of writing, is \$0.007 per GB per month. This is secure, backed up, never-fail storage, far cheaper than can be attained in any normal data centre operation in a local authority.
- C2 The cloud computing model extends a long way beyond simple data storage, however, and it is possible to buy computing power in a wide range of forms, generally classed at three levels:
- Infrastructure as a Service (IaaS): processing, storage, networks, and other fundamental computing resources, where the consumer can deploy and run their own software, including operating systems and applications
 - Platform as a Service (PaaS): processing, storage, networks, and operating systems are all provided, but the consumer will deploy their own applications
 - Software as a Service (SaaS): the applications are provided as a service (with all that sits under them), and the consumer simply uses them. A significant advantage here is that upgrades, patches and all the work normally involved in hosting an application locally is taken care of, reducing effort and cost for the consumer of the service.
- C3 Most application vendors now have a SaaS offering, as well as offering the software for organisations to run and maintain on their own, in-house servers. Times have changed – it used to be standard practice for every local authority to have its own data centre (or perhaps use the data centre of the commercial company to whom it had outsourced its ICT), and that data centre would have incurred significant cost in construction, and have significant operational costs too, in everything from electricity to staff. Over time, the infrastructure in the data centre would need replacing – everything from the servers and their operating systems, to the firewalls, network end points, power supplies (data centres need expensive 'uninterruptible power supplies', with built-in batteries to handle failure of the public supply), the backup generator, the cooling system (servers generate a great deal of heat), fire suppression needed in case of fire, robust physical security – the list goes on.
- C4 Cloud services are basically a commodity, and as with all commodities, there are multiple suppliers competing for business. The biggest are three: Google Cloud Platform, Microsoft Azure, and Amazon Web Services, although there are many other suppliers in the market. For some years, organisations worried about the

security of their data, the longevity of the suppliers, and the reliability of the service. Thus, for some years cloud remained in the minds of more conservative organisations as something that was for the near future, but not the present. That time has passed, and now thousands of well-known organisations in the private and public sector use cloud services, rather than going to the expense and trouble of running their own data centres. Cloud has proved to be secure – thus for instance the Cabinet Office decided in 2014 to move to a cloud-only model for all its computing, having gone to some lengths to be certain of the security, reliability etc of the supplier it eventually chose, Google. Even the UK Ministry of Defence uses Microsoft Office 365 for its email and Azure for its data storage.

- C5 A big advantage of cloud computing is its scalable nature, so that as an organisation's needs change, over the short or long term, they can scale up or scale down, and pay accordingly. Cloud is thus a revenue cost, basically on a 'pay as you go' model, and this is increasingly attractive to organisations that are uncertain what their future computing needs will be.
- C6 It is interesting to reflect that it has been known for many years that technology is adopted at a predictable rate, following the 'technology adoption model' first mapped out by Everett Rogers in 1957, and published in his 1962 book, 'Diffusion of Innovations' (Ref 40). Rogers, an academic at Iowa State University, had studied the rate at which farmers adopted new technology (farm equipment, new seed stock, novel farming methods, etc), and found that adoption followed the normal distribution.

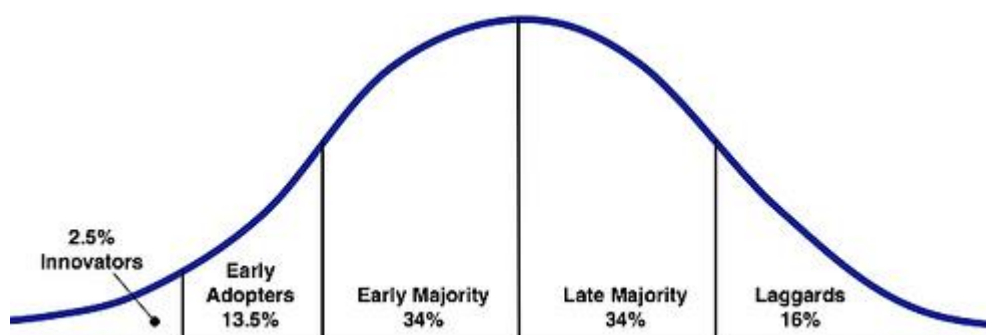


Figure Three: The Technology Adoption Curve

The rate of adoption of cloud computing is generally acknowledged now as being near the top of the rising curve, a good way through the 'early majority' segment. This assessment is reinforced by the news that Amazon Web Services' cloud revenue, while still growing strongly at 64% year-on-year, has slowed from the previous year's growth of 69% (Ref 41), which puts the adoption of cloud on the shoulder of the rising curve.

The Way Ahead for Bracknell Forest Council and Cloud Adoption

- C7 The Council currently has a data centre, located in Time Square. It has all the features that a modern data centre requires, including a large generator that will provide power not only for the data centre, but also the rest of the building if the public supply fails. Looking ahead, much of the data centre infrastructure will

become end-of-life around 2020, and it will be important to avoid any temptation to keep it going beyond that point, except in a minimal fashion as end-point to local networking within the building, connections to other sites and the internet, etc. Strategically, the cloud is the only sensible option, with costs likely to drop rather than increase as it becomes ever more commoditised, the concerns about security, reliability etc now diminished, and the universal trend among software suppliers to favour it as their delivery method. For instance, Microsoft have said that in future all the innovations in their Office suite will be released in the cloud-based 365 version first, with the on-premises version not getting them until later, or in some cases not at all. Google do not offer an on-premises version of their office productivity suite, and never have. Adoption of cloud is also driven by cost savings, with Gartner reporting that 'organisations are saving 14% of their budgets as an outcome of public cloud adoption' (Ref 42).

- C8 Therefore, while it is appropriate for the Council to examine in detail which of its services should move to the cloud and when, the strategic direction is clear, and it is only a matter of timing – with an end date of 2020.

APPENDIX D: METHODS USED IN DIGITAL DEVELOPMENT

- D1 As outlined above, digital refers to the use of internet connectivity, typically through mobile devices, in interactions for social or business purposes. These interactions are not usually complex or time-consuming, as this isn't convenient on a small device, but typically immediate and short-lived. User interaction will be via a browser, or a specialist software package developed primarily for use on mobile devices, known in the jargon as an 'app'. Digital applications need to automatically re-size to both the small screen of the smartphone and the large screen of the tablet/laptop/desktop computer, and cope with the fact that connectivity on the move may be intermittent. The digital world has been driven most strongly by domestic rather than business-to-business demand, and the phenomena of social media, on-line shopping, on-line banking, on-line news and so forth need no description here, having in many ways already transformed the modern world.
- D2 In the ICT world, there has been a tendency to differentiate between digital and conventional ICT, with the former seen as being faster moving, rapidly evolving, and impactful. Thus, digital projects are normally associated with 'agile' development methods (see below), while mainstream ICT is thought of as more monolithic, carefully-planned and executed, less fleet of foot, and associated with more traditional development methods such as Prince2. Even Gartner, the leading technology-watch organisation, has promoted the 'bi-modal' concept:

“the practice of managing two separate but coherent styles of work – one focussed on predictability and the other on exploration” (Ref 43)

This rather has overtones of, to quote George Orwell (Ref 44), “four legs good, two legs bad”, although of course we should recall that by the end of that novel the mantra was “four legs good, two legs better”. The point is this, that methods evolve to suit the work to be done. Where the work is to develop websites and apps, which are highly visual and can be developed incrementally, then a rapid application development method is most appropriate. The approach adopted by the Government Digital Service (GDS), widely regarded as the leader in the field, is a mixture of the rapid application development methods that evolved for software development in the 1990's (RAD and DSDM), the more recent working practices of SCRUM and Lean, and 1950's-developed Japanese Kanban manufacturing method. These techniques, which involve 'sprints' (a period of a month or less during which a potentially releasable product increment is created), 'daily standups' (a short session during which each team member talks about their work – held in front of the 'team wall', itself a representation of the project in terms of 'to be done', 'in progress', and 'done' – a technique adopted from Kanban), 'retrospectives', and periodic 'show and tell' sessions (Ref 45). The GDS method is strongly centred on the experience of the digital system user, and so draws on the techniques of user-centred design, which is highly appropriate given the nature of digital interactions. The GDS design principles begin with the statement, 'start with user needs'. The ten principles are thus (Ref 46):

- Start with user needs
- Do less

- Design with data
- Do the hard work to make it simple
- Iterate. Then iterate again.
- This is for everyone
- Understand context
- Build digital services, not websites
- Be consistent, not uniform
- Make things open: it makes things better

D3 Note that there remains a place for conventional project management methods (of which the UK-developed Prince2 is the best known in government, although there are others). Where the system or solution to be developed cannot be created incrementally with demonstrable stages, in an evolutionary fashion, but involves rather a well-defined and possibly complex end-product, other methods have evolved. These involve defining at the beginning what is to be produced, the steps needed to produce it, the resources needed at each stage, the tests to be undertaken, the likely problems to be encountered along the way, and so forth. This remains the best method for producing such systems, and recent experience has shown that while the GDS-style agile method is excellent for relatively straightforward digital systems, it does not readily scale up to more complex applications, especially where multi-party system integration is required (e.g. Ref 47). Thus, for any ICT project, be it digital or not, it is best to use the right methods for the job in hand. Note however that many aspects of the GDS method can be used in non-digital ICT projects, and indeed in management in general.

APPENDIX E: GOVERNMENT SECURITY CLASSIFICATIONS

- E1 The Council still uses the old Government Protective Marking Scheme, in that documents are marked as Protect, Restricted or Unrestricted. (Note that there never was a formal classification in the UK of 'Unrestricted'; this should have been 'Unclassified'). Since 2nd April 2014 a new scheme has been in force across the whole of government, including local government (Ref 48).
- E2 The old scheme, which had a total of 6 levels (Unclassified, Protect, Restricted, Confidential, Secret, and Top Secret) has been replaced with just 3 levels (normally written in capitals): OFFICIAL, SECRET, and TOP SECRET. Local government does not work at the SECRET or TOP SECRET levels. Indeed, if it did, there would be major implications in terms of IT infrastructure, staff security clearances, enhanced building security, procedures for handling documents, etc.
- E3 The rules for marking and handling documents are as follows:
- There is no unclassified level below OFFICIAL - any information that is created, processed, generated, stored, or shared within (or on behalf of) the Council is OFFICIAL by definition.
 - There is no requirement to mark routine OFFICIAL information.
 - Personnel, physical and information security controls for OFFICIAL are based on commercial good practice, with an emphasis on staff to respect the confidentiality of all information. In some instances a more limited need to know must be enforced and assured. A single handling caveat OFFICIAL-SENSITIVE provides for this.
 - OFFICIAL-SENSITIVE must be clearly marked.
 - Organisations may apply a DESCRIPTOR to identify certain categories of sensitive information and indicate the need for common sense precautions to limit access. Where descriptors are permitted they must be supported by local policies and business processes. Descriptors should be used in conjunction with a security classification and applied in the format: OFFICIAL-SENSITIVE [DESCRIPTOR].
 - The Cabinet Office maintains the following list of core descriptors to ensure a consistent approach is adopted across government:
 - 'COMMERCIAL': Commercial- or market-sensitive information, including that subject to statutory or regulatory obligations, which may be damaging to the organisation or to a commercial partner if improperly accessed.
 - 'LOCSEN': Sensitive information that locally engaged staff overseas cannot access. (Clearly this does not normally apply to Local Authorities).
 - 'PERSONAL': Particularly sensitive information relating to an identifiable individual, where inappropriate access could have damaging consequences.
 - The use of descriptors is at local discretion, but where they have been applied by an originator, they should be carried forward.

- There is no requirement to revisit old documents and re-classify them.
- It is proposed that a corporate project group be set up to plan the implementation of the new scheme. This would include reviewing and updating information security policies and guidance planning and implementation of communications and training, and initiating the technical work to remove the enforced selection of 'Restricted', 'Protect' and 'Unrestricted' before sending emails.
- As all information is implicitly OFFICIAL it means that staff only have to remember to mark documents/information they deem to be OFFICIAL – SENSITIVE (with an additional descriptor where necessary).

APPENDIX F: VOIP TELEPHONY

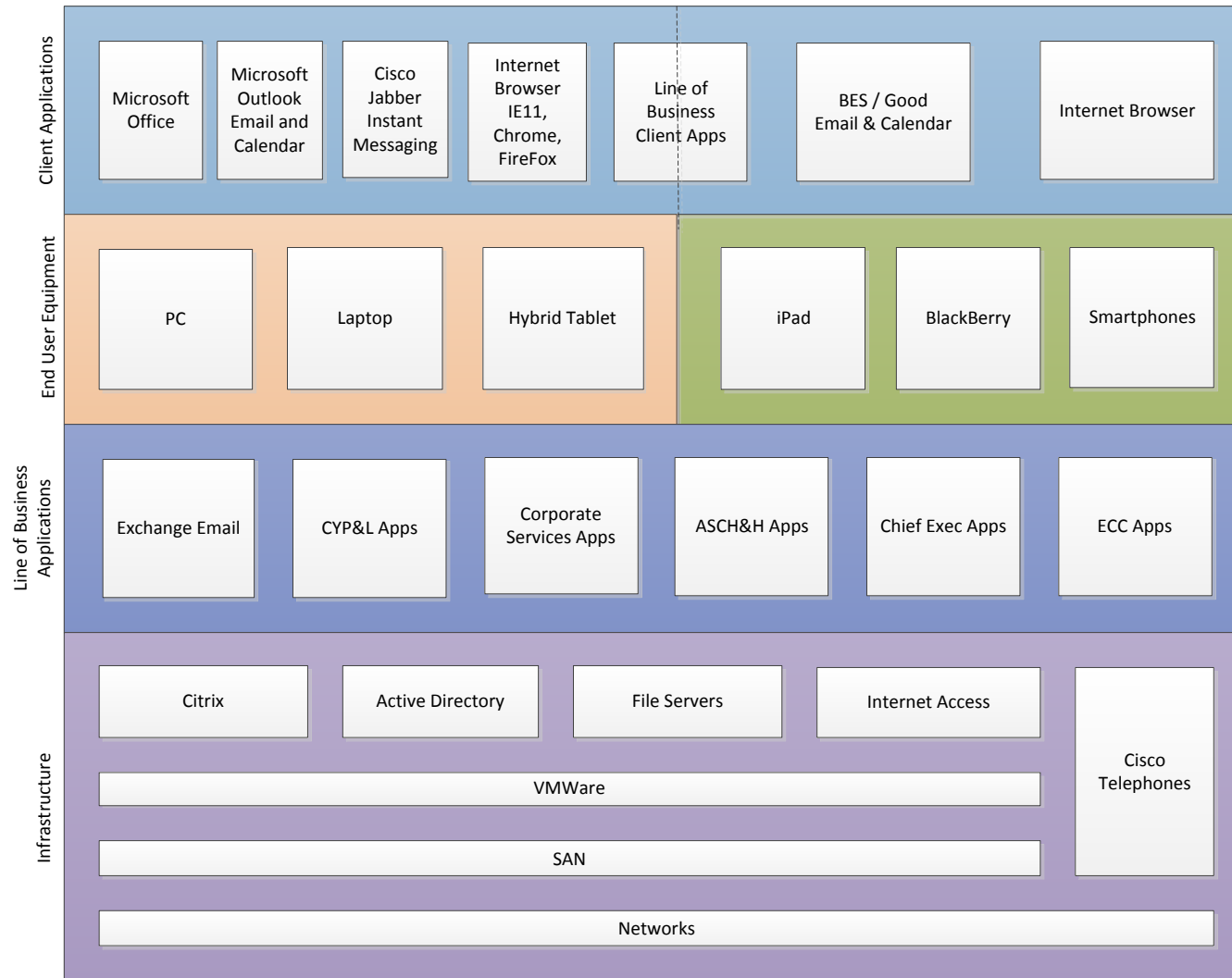
- F1 Originally, telephone systems worked by switching circuits, so that the two proponents in a conversation were connected over dedicated end-to-end circuits, the microphone on one handset going to the earpiece on the other, and vice-versa. These systems became quite sophisticated at the corporate level, with many organisations having their own in-house telephone exchange (a PABX, or Private Automatic Branch eXchange), whereby users could divert calls to secretaries, pick up other phones ringing nearby, and so forth. These systems were expensive, as was all telephony at that time.
- F2 As desktop computers entered the workplace, they too required connectivity, and offices were fitted out with two separate networks, one for telephony, one for computing. Telephony moved on, and eventually much of the technology in phone systems became digital (in the ones and zeros sense, not the GDS sense), and it was then realised that it should be possible to use a single data network to carry both computer data and voice data. By then, computer data sent over networks used a format known as "I.P.", short for Internet Protocol. This technology was originally developed to allow data to traverse networks based purely on the address carried with each digital data bundle, with the routing across the network being handled in real time. Known as 'packet switching', this was developed in the US to cater for networks that could be damaged during a nuclear war, with the need for data to nevertheless find its way to its destination, by whatever route still existed. These networks were the forerunner of the internet, which still works on the basis that data is broken up into packets, each of which finds its way to its destination by any route available.
- F3 Voice traffic, suitably formatted, was thus able to be carried across the computer data network, and this became known as 'Voice over IP'. It obviously cut down on the wiring, but it also provided greater flexibility for users. In the old world, with fixed phones, calls would go to a defined handset, unless diverted by entering a command into the handset, which was picked up by the PABX. With VoIP, the handset on any desk would be configured – when the user went through the log-in process – to receive their calls, which greatly facilitated hot-desking. The technology then moved on, and the functions of the handset could be reproduced in software on the desktop computer – so that it became a so-called 'soft-phone'. In parallel, VoIP technology was starting to be used in the consumer world, with phone calls being made at no cost over the internet, avoiding the charges of the telecommunications providers. Skype, which was launched in 2003, and has been owned by Microsoft since 2011, was one of the first software applications to allow this, but there are many such systems now. As communication networks expanded in capacity, and home users increasing installed broadband, so video calls (including free Skype calls), which need much more data than voice, also became possible.
- F4 As the Council stands today, there is a Cisco VoIP system in place, with Cisco desk phones in use, plus the soft phone application (Jabber) in place on computers. The Jabber application also works when a laptop is connected in remotely, and so users can receive and make calls from their laptop even when working from home, or indeed anywhere they have a connection, using a headset (or even the microphone and speaker on their laptop, although clearly that is inconvenient). As the Council moves to a one-laptop-per-person model,

there is no need for a Cisco deskphone, and – as many organisations now do – each person can use a lightweight headset to receive and make calls. Modern devices have noise-cancelling microphones, and some have noise-cancelling headphones too, so telephone calls in a busy open plan office are actually a better experience than with the older desk phones. Some users will nevertheless insist on an old-style phone, and they can be catered for with simple VoIP deskphones, which effectively mimic the capability of the headset – calls are still handled via the Jabber application. Jabber also supports video calls, although Jabber does not interface to Skype, which is the most widely used video calling system. It would seem appropriate to allow the use of alternatives to Jabber, including Skype, on the corporate PC estate.

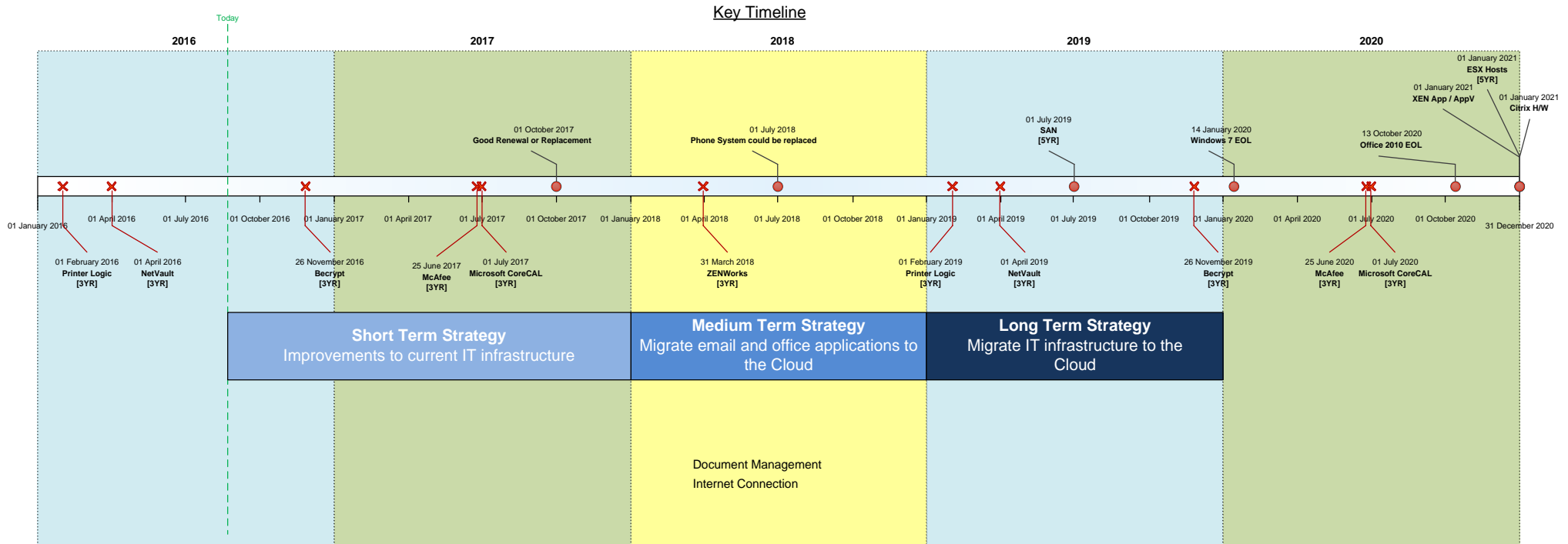
APPENDIX G: MOBILE TRIAL – LESSONS LEARNED

- G1 What went well?
- Workstyles Concept – influencing temporary agency staff
 - Changed work practices with new ICT kit – BPR
 - Training
 - Predict change then test it
 - Challenging users to get the right solution
 - Not single solutions but majority for 2/3 difference ones
 - SSD Upgrades
 - Influencing process thinking
 - People are working more effectively in the field
 - Less admin and time
 - Quicker record updates – better information, timely, data quality
- G2 What didn't go so well?
- Workstyles not applied consistently
 - Right IT Kit – can't enable change in itself
 - Not training – support issues
 - Resourcing issues' kit/supplier (software and hardware)/support/infrastructure
 - Kit compatibility
 - Getting the right kit – moving picture
 - Not big player for suppliers
 - Software implications still not understood
 - Understanding the pace of change of working practices
 - Making access cost effective
 - Not always changing processes
- G3 Challenges
- Culture change around new processes
 - Culture of trust of staff
 - EDRMS not available for all areas
 - Finance
 - Mobile apps not available
 - Collaboration tools not available
 - Video Conferencing not available
 - Right kit
 - Right connectivity/access
 - Right applications
 - Stable setup
 - Wi-Fi strength
 - Speed
 - Internet access
 - Battery power
 - Car chargers/booster pack
 - 4G
 - BPR support required
 - Giving up paper

APPENDIX H: CURRENT TECHNOLOGY MODEL



APPENDIX J: CORPORATE TIME LINES



APPENDIX K: BUSINESS APPLICATION TIME LINES

