

**SCOTLAND
EXCEL** 



**ICT CATEGORY
STRATEGY DOCUMENT**

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1 Introduction

This strategy has been developed to improve current public sector ICT infrastructure and embrace the national strategy, ‘Scotland’s Digital Future – Delivery of Public Services’ as well as the Scottish Local Government’s Digital Transformation Strategy.

It takes the main themes and links them to the future ICT direction of Local Government and the opportunity for future digital services at a time of tight financial constraints, but also aims to be reflective of the digital transformation within society as a whole.

A culture of “Digital First”, “Channel Shift”, mobile and cloud computing is intrinsically embedded within the current day to day lives of citizens as a digital Scotland embraces the “Internet of things”. Indeed Ofcom's Communications Market Report 2015 reveals record ownership and usage of mobile-phones are turning Scotland into a ‘smart-phone society’, as the most popular device to access the internet, as shown in Figure 1.

Most important device for accessing the internet in Scotland

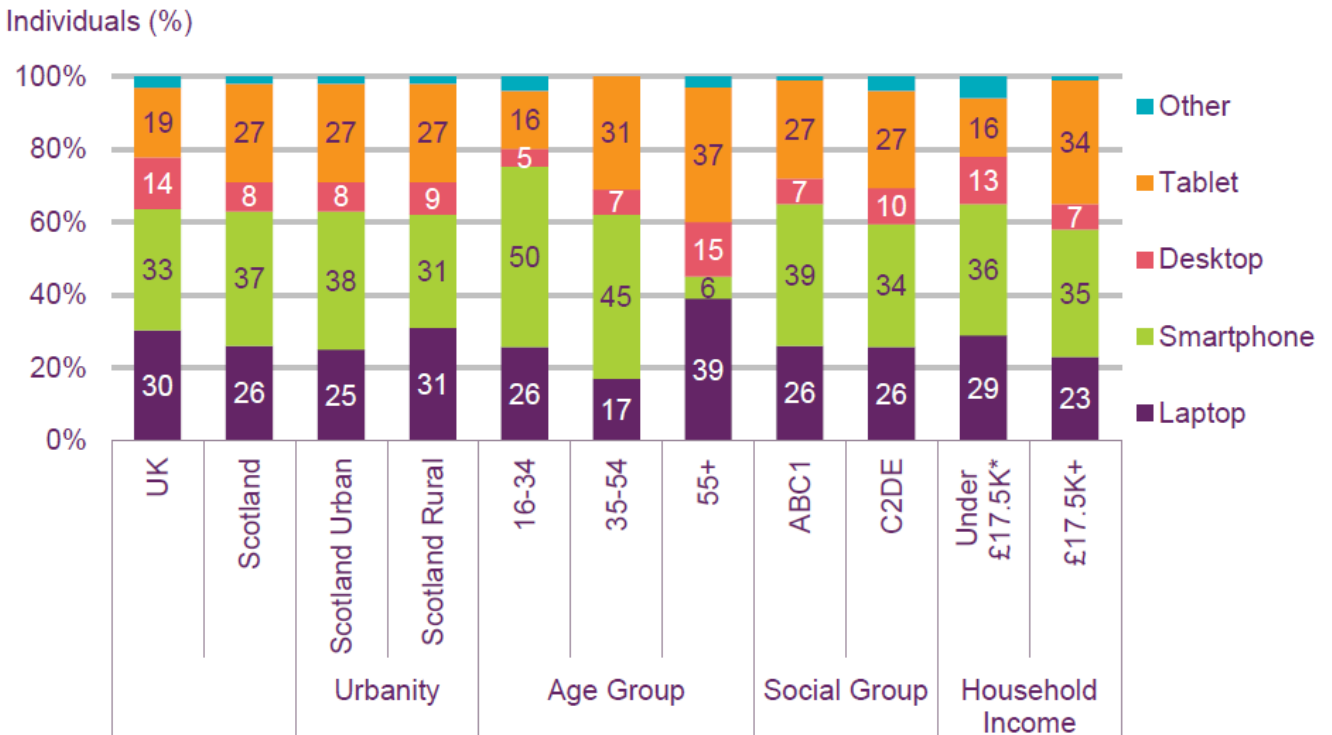


Figure 1: Devices used to access the internet
(Source: Ofcom Technology Tracker 2015)

This strategy focuses on how ICT can enable Local Government to meet customer demands, reduce costs and address Public Sector Reform, by providing better public services, better customer experiences for citizens and opportunities for collaborative frameworks and projects to encourage shared service best practice and a joined up approach to ICT procurements.

2 Current Position

The current ICT infrastructure in Local Government has evolved over the last decade to maintain and upgrade “legacy” systems that were initially based on Local Authorities requirements of housing their own individual data centres for storage and high performance computing servers within council premises. These systems were costed under a total ownership model of both hardware and software. This model was fit for purpose at the time but was subject to additional cost after initial purchase due to “added” integrations that are required to keep the systems current and able to integrate with other council back office systems. In the last few years this model has been superseded with the current breakthrough in “cloud computing” whereby service providers host software services for clients within the service provider’s infrastructure and software services are accessed securely over the internet. Councils in Scotland have recognised this development and have begun to embrace this concept but are at differing levels of implementation and prioritisation of “cloud” projects based on a plethora of disparate demands. In order to help councils manage this transition from existing solutions to new platforms Scotland Excel as the procurement centre of expertise can encourage councils to adopt and develop new digital frameworks to collectively share risk across councils to realise digital opportunities and take advantage of new technology developments. Scotland Excel has already implemented two such ICT frameworks which have been well received within Local Government. A brief summary of their current status is detailed below:

2.1 On-Line School Payments

Scotland Excel, in collaboration with the National Working Group, the Improvement Service, SEEMis (Scottish Educational Management system) – and under the auspices of the Local Government ICT Strategy Board – developed a framework for the collaborative procurement of an online system for managing school related payments.

The framework went live in Nov 2014 and is for an initial two 2 year period with the option to extend for a further two years, with a maximum contract value of £10m over the 4 years. Three service providers were awarded a place on the framework.

Prior to the framework, over £100m of opportunity was identified annually as the total cash handled by Scotland’s Local Authority Schools.

The framework allows schools, parents and councils to migrate to an on-line payment system covering school meals, school trips, school uniforms, school sports kits and other ancillary school payments removing the need for cheques and cash handling payment facilities. This transformation to a digital payment platform aligns with the Scottish Government’s Digital Future Strategy and with Scottish Local Government’s Digital Transformation Strategy.

The usage of the framework has increased substantially within the last quarter with 10 councils now participating and a further 6 councils expressing interest and preparing business cases .The spend is modest at present, but will increase in the coming months as more councils begin to call-off from the framework.

Given the sensitivity and challenges surrounding ICT, Security and Education the framework has been generally well received with few issues arising within the implementation phase as schools, parents and councils adapt to on-line payments.

The initial estimated savings from using the framework are projected at £750k. This is based on a conservative estimate of 20% of Scottish schools using the system for school meals only and the subsequent cost avoidance in transaction costs and cash handling costs.

2.2 Customer Service Platform

The Customer Service Platform framework was published to the market in January 2016. The framework's value is advertised at £15 million over 4 years, with an initial indication from 16 councils that are interested in purchasing from the framework.

During development it became apparent that many council CRM systems are at "end-of-life" and do not possess the appropriate functionality now required of a modern CRM system. The tender incorporates current and future technologies as per the Scottish Government's Digital Future Strategy and the Scottish Local Government's Digital Transformation Strategy in order to ensure maximum participation.

There are two Lots within the Framework - Hosted solutions and On-Premises solutions - thus giving councils the potential of integrating with existing legacy systems and remaining "in-house" or moving to a cloud based externally hosted system. 10 suppliers tendered for the framework, between the two Lots. Scotland Excel hosted supplier demonstrations early March with subsequent technical and commercial evaluations. This resulted in two suppliers being recommended for award for Lot 1 – Hosted Solutions – and three suppliers being awarded to Lot 2 – On-Premises Solutions. The framework has been operational since 1st June 2016 and several councils are currently preparing business cases for the solutions available via the framework.

In addition to the frameworks outlined the Scotland Excel ICT team are working with various Local Government bodies developing innovative collaboration opportunities to prioritise digital or cloud transitions and identifying cost reduction opportunities. Scotland Excel is also developing Key Supplier Management programs and Educational Software Digital opportunities to build upon and improve existing supplier relationships, platforms and frameworks.

2.3 Vision Update

The Scottish Local Government Digital Transformation Board published a strategic vision for Local Government ICT in 2013. This 10 year strategy is still relevant in part, due to its forward looking approach. It articulates the outcomes Scotland Excel want to achieve and how we are going to do this. It acknowledges that good practice exists and should be used and extended wherever it is appropriate. To achieve this Scotland Excel and Local Authorities need to have strong governance, the capability to deliver and a set of principles by which we will make decisions. Figure 2 outlines how the Board intend to achieve the outcomes that it has set out and the work streams that it will focus on.

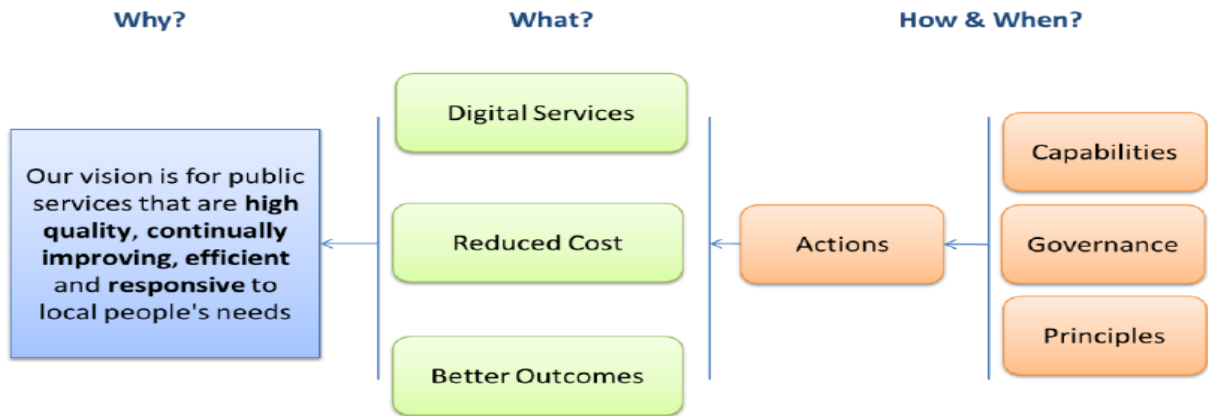


Figure 2: Understanding the Why, What, How and When of Digital Transformation (Source: Scottish Local Government Digital Transformation Board)

3 Opportunities

Exploring the opportunities for future ICT collaborative procurement frameworks is the top priority for the Scotland Excel ICT Category team. The framework for the Customer Service Platform, detailed earlier, has been operational from June 2016. Scotland Excel will look at developing future potential procurements such as, ERP management system, educational software, digital health and social care, digital social housing, mobile working applications, building and planning software applications and shared ICT services have been mooted and now need to be assessed and progressed.

A UIG for all councils should be called to level set where a common approach would be best served to bring together the various requirements and understand where councils are at with respect to digital transformation. Scotland Excel can encourage council ICT teams to collaborate on ICT infrastructure and associated services and for the demand to be aggregated and managed by fewer organisations. Senior professionals managing and running ICT infrastructure and support desks, may want to see technical specialists shared across councils. ICT can be put in place to enable organisational change, information sharing and integration, and support the joint communications and systems required for transformation and shared delivery of local public services.

A suggestion is to continue the excellent work and outcomes from the Customer Service Platform framework and for the technical panel to continue to meet on a monthly basis. Scotland Excel can continue to facilitate this forum and ensure we keep up to date the ICT marketplace as ICT products transition to the “cloud”. We can continue to develop work-streams and opportunities for cloud transition and to prioritise common ICT goals that would be conducive as a shared procurement platform for our user councils.

ICT outsourcing has become a common theme within organisations but this requires a cautious approach as the opportunities realised are in the main over a longer period on contracts or frameworks for up to 10 years. Scotland Excel should recognise this market and help support a “right” sizing model for out-sourcing and should be ready to facilitate the scale of out-sourcing required, by our councils.

Opportunities are also arising from the new procurement legislation being implemented by the Scottish Government in April 2016 and in particular the “innovation partnership” which is being introduced increasing the scope to use public procurement to develop new solutions to meet authorities’ requirements. This can be particularly beneficial to ICT procurements as development road maps are used widely within the industry to future proof any service or commodity procurements.

3.1 Stakeholder Relations

Stakeholder engagement is a key element of a successful procurement team. The ICT category team enjoys good working relations with its providers, councils and in particular the council ICT Technical Managers who have been key in evaluating the technical aspects of current Scotland Excel frameworks and are also excellent sounding boards for technical clarifications on any existing or new platforms that require further research. There is scope to develop the relationships further, particularly with key councils who have assisted on previous technical panels - Orkney Council who represent small rural councils, Dundee City who represent medium city councils and Aberdeenshire who represent large rural councils – by continuing to encourage participation in the existing frameworks and help publicise the role of Scotland Excel as a joint procurement centre of excellence for all Scotland’s thirty two Local Authority Councils.

With a deep knowledge of the sector and strong interpersonal skills within the ICT category team, the best method of engagement is via face-to-face meetings in which a member, or members, of the team visit council offices. Engaging with the right people within the council is important, and should see our team meet a mixture of dedicated ICT team employees, end service staff procurement professionals.

The purpose of these meetings will be to ensure councils are fully aware of the frameworks we have in place, the benefits of using them and the high levels of expertise and support they will receive from the Scotland Excel team. The overall aim is to maximise use of our frameworks and enhance saving opportunities.

As well as a focused supplier engagement programme a broader approach should be taken via means of an ICT team newsletter which has been published in Dec 2015 and shall be updated on a quarterly basis with Scotland Excel branded communications sent to key stakeholders at all councils. This newsletter will highlight noteworthy events and developments taking place both within the Scotland Excel ICT category team and the sector at large. Where possible it should be used to encourage participation in frameworks and highlight new opportunities.

Also, continued Scotland Excel participation in key ICT events & forums – for example SWAN (Scottish Wide Area Network) and PECOS (Professional Electronic Commerce On-line System) - are key in developing a network of contacts and publicising the role and value add of Scotland Excel.

The Scotland Excel ICT category team will keep abreast of current technology trends and remain passionate in their pursuit of opportunities to demonstrate excellent Category Management and provide a first point of call for Scotland’s thirty two Local Authority councils.

3.2 Outcomes

The strategy focuses on the achievement of three outcomes, enabled by ICT that will take help us to realise the overall vision, as shown in Figure 3. These are aligned with the Scottish Local Government Digital Transformation Board's work streams.

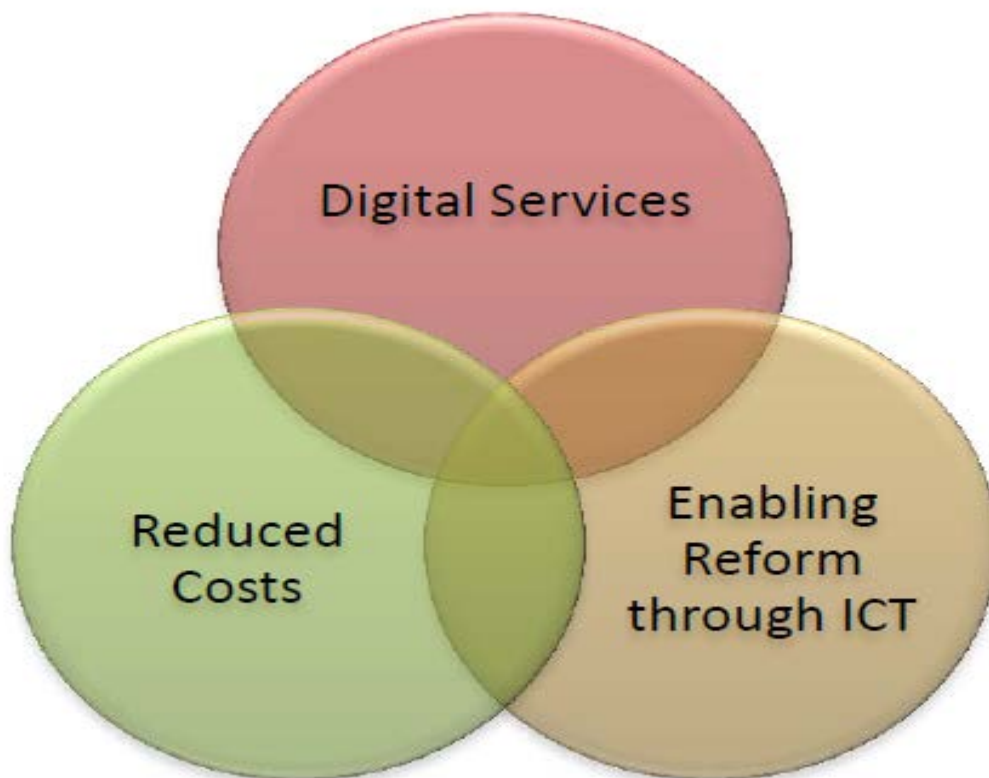


Figure 3: Outcomes

(Source: Scottish Local Government Digital Transformation Board)

3.2.1 Digital Services

A range of public services are now available through digital channels. As shown in the Ofcom technology tracker Scotland is now a smart-phone society but more applications need to be made available in the public sector to compliment this. The establishment of the Scottish Government's Myaccount portal is an excellent example of what has been developed in the last few years to ensure every citizen has access to Scotland's Public Services digitally through a secure single sign-in authentication at point of registration and fits perfectly into this strategy.

Furthermore, the website of an organisation is no longer seen as an addition to the services of the organisation but as its customer face. To meet this demand, the public sector should aim to have as many public services as possible available digitally across all channels. Access must be secure, especially in terms of sensitive data and on line payments; authentication of identity must be simple; digital services must be well designed, easy to use and they must meet the needs of citizens. Technology must keep pace with the technologies widely available to citizens. Also Social media - such as Facebook and Twitter - are well established methods

of communication and whilst being primarily for non-business, can be tailored to business environments e.g. LinkedIn.

ICT hardware procurement purchased by Local Authorities in Scotland is usually completed via the Scottish Government National Framework therefore this strategy will concentrate on software and digital services and solutions. The traditionally distinct sectors of IT / consulting services and marketing communications are converging at an ever increasing rate. Mergers and takeovers in the sector have blurred the boundaries between different solutions, making the challenge of procuring the correct solution challenging for Local Authorities.

What these sectors do have in common is surprisingly similar business models, with a people- and project-based approach to delivering technology-centric services to enterprise clients. The digital services sectors tracked in this market include (i) Data & Analytics, (ii) Strategy, Design & Build, User Experience, (iii) Bespoke Software & Systems Integration, (iv) e-Commerce and (v) Enterprise Mobility & App Development.

This convergence is expected to continue into 2016 and beyond, as enterprise clients increasingly demand end-to-end digital services which enable them to build genuine digital advantage, by transforming the way they operate internally and engage with customers externally.

3.2.2 Reduced costs

ICT is a cost as well as an investment in better services. We must be sure that we deliver best value by reducing the cost of our ICT infrastructure where possible, and investing in ICT where this can reduce the overall costs of our services e.g. by automating transactional processes. We can reduce costs by working together across Local Government and the rest of the public sector to share infrastructure and to commission and procure jointly. This is not new to Scotland – we have numerous examples to build on - Scotland Excel has established the two frameworks On-line School Payments and Customer Service Platform detailed above. Other examples of where collaboration has delivered excellent results are SEEMis , Myaccount and Myjobscotland portals / applications.

3.2.3 Enabling Reform through ICT

The Public Sector Reform agenda is based on the four pillars of the Christie Review, i.e. prevention, place, performance and people. ICT is crucial to enabling the reform agenda, and the better outcomes that will result from it. Secure sharing of data is required by partnerships working on a locality basis, enabling the targeting of prevention activity, 'joined up' services to individuals and families by having a single 'view' of them, and also enables the efficient governance of the partnership.

New approaches to preventing poor outcomes for our older citizens will involve further developments in telecare. Advancing personalisation and self-directed support will allow people to choose, manage and control their own services often through an ICT interface. ICT and social media can help us gather people's views in new ways allowing more opportunity for co-creation between the service user and the service. This outcome is most likely to be delivered by innovation and new services, however there are examples already operational, e.g. MyDiabetesMyway portal, Get it Right for Every Child and MyAccount.

3.3 Market Place & Trends

In-line with private businesses Local Government is trending and evolving to “cloud based” digital services environment and it is important we understand this to realise the opportunities this will present in the forthcoming years and future proof any procurements to embrace this concept.

Listed below are the main market definitions and trends that are applicable when a business is transforming from traditional on premise hardware owned platforms to hosted service provider platforms.

3.4 Cloud Computing

In recent years “Cloud Computing” has become the market trend on how organisations consume IT using the internet. There are various products on the market from Microsoft, Oracle, IBM, Amazon and others. The cloud can be “public”, “private”, “community” or “hybrid” depending on end requirements with the public cloud being the most utilised platform.

The basic types of service models in cloud computing

Gartner defines public cloud computing as a style of computing where scalable and elastic IT-enabled capabilities are provided as a service to external customers using Internet technologies. For example, public cloud computing uses cloud computing technologies to support customers that are external to the provider’s organisation. Using public cloud services generates the types of economies of scale and sharing of resources that can reduce costs and increase technology choices. From a government organisation’s perspective, using public cloud services implies that any organisation (in any industry sector and jurisdiction) can use the same services (e.g., software, infrastructure, platform), without guarantees about where data would be located and stored.

3.4.1 SaaS – Software as a Service

Gartner defines Software as a Service (SaaS) as software that is owned, delivered and managed remotely by one or more providers. The provider delivers software based on one set of common code and data definitions that is consumed in a “one to many” model by all contracted customers at any time on a pay-as-you-go basis or a subscription based on usage. Unlike traditional software, which is conventionally sold as a perpetual license with an up-front cost (and an optional ongoing support fee), SaaS providers generally price applications using a subscription fee, most commonly a monthly fee or an annual fee. Consequently, the initial setup cost for SaaS is typically lower than the equivalent enterprise software. SaaS vendors typically price their applications based on some usage parameters, such as the number of users using the application. However, because in a SaaS environment customers' data reside with the SaaS vendor, opportunities also exist to charge per transaction, event, or other unit of value, such as the number of processors required.

3.5 Infrastructure as a Service

Gartner defines Infrastructure as a service (IaaS) is a standardised, highly automated offering, where computer memory resources, complemented by storage and networking capabilities are owned and hosted by a service provider and offered to customers' on-demand. Customers are able to self-provision this infrastructure, using a Web-based graphical user interface that serves as an IT operations management console for the overall environment. API (Application Programming Interface) access to the infrastructure may also be offered as an option.

3.6 Platform as a Service

Gartner defines platform as a service (PaaS) offering, usually depicted in all-cloud diagrams between the SaaS layer above it and the IaaS layer below, is a broad collection of application infrastructure (**middleware**) services (including application platform, integration, business process management and database services).

Other services provided via the "cloud" are storage as a service (STaaS), security as a service (SECaaS), test environment as a service (TEaaS), and many more which are based on the principles detailed on the 3 main services listed above.

3.7 Pricing Models

A cloud computing provider's typical goal is to maximize its revenues with its employed pricing scheme, while its customers' main goal is to obtain the highest level of Quality of Service (QoS) feasible for a reasonable price. Therefore, satisfying both parties requires an optimal pricing methodology. The price charged is one of the most important metrics that a service provider can control to encourage the usage of its services.

Pricing is a critical factor for organizations offering services or products. How the price is set affects customer behaviour, loyalty to a provider, and the organization's success. Therefore, developing an appropriate pricing model will help achieve higher revenues. The price determined for a service or product must consider the manufacturing and maintenance costs, market competition, and how the customer values the service or product offered. There are various sets of price models that different organizations can employ. Research has illustrated how price is connected to a set of many implicit features of the price model. Such an approach helps in resolving many issues regarding pricing between the customer and the provider.

Software vendors utilize many pricing techniques. For example, a typical pricing approach is to **pay once for limitless usage**. However, this approach is rigid and does not consider many other factors that affect pricing, such as the age of resources and price fairness. Many major cloud computing providers (e.g., Amazon Web Services and Google App Engine) employ "**pay-per-use fixed pricing**" which charges users according to their overall resource consumption. "**Pay for resources**" is another technique, in which users are charged according to the storage or bandwidth size provided. **Subscription** is another pricing technique, in which the customer subscribes with a certain service provider for a fixed price per unit for long periods of time. Moreover, a service level agreement (SLA) is an essential part of cloud

computing. It describes the negotiations between the provider and the customer regarding the services provided. The final agreement is verified via a contract between the involved parties. An SLA might involve agreements regarding Quality of Service (QoS), pricing, guarantees, and so on.

Price models can be broken down to the following main constituents:

3.7.1 Initial costs.

This is the amount of money that the service provider spends annually to buy resources.

3.7.2 Lease period

This is the period in which the customer will lease resources from the service provider. Service providers usually offer lower unit prices for longer subscription periods.

3.7.3 QoS

This is the set of technologies and techniques offered by the service provider to enhance the user experience in the cloud, such as data privacy and resource availability. The better QoS offered, the higher the price will be.

3.7.4 Age of resources

This is the age of the resources employed by the service provider. The older the resources are, the lower the price charged will be. This is because resources can sustain wear over time, which reduces their financial value.

3.7.5 Cost of maintenance

This is the amount of money that the service provider spends on maintaining and securing the cloud annually.

3.8 Licensing Considerations

Software Licensing Agreements are required by users to access and share software.

A software license is a legal instrument (usually by way of contract law, with or without printed material) governing the use or redistribution of software. All software is copyright protected, in source code as well as object code form. Software license grants the licensee, typically an end-user, permission to use one or more copies of software in ways where such a use would otherwise potentially constitute copyright infringement of the software owner's exclusive rights under copyright law.

The most significant effect of this form of licensing is that, if ownership of the software remains with the software publisher, then the end-user must accept the software license. In other

words, without acceptance of the license, the end-user may not use the software at all. One example of such a proprietary software license is the license for Microsoft Windows. As is usually the case with proprietary software licenses, this license contains an extensive list of activities which are restricted, such as: reverse engineering, simultaneous use of the software by multiple users, and publication of benchmarks or performance tests.

It is critical to consider licensing when conducting ICT procurements and balance this model with subscription SaaS models (which do not require licenses) and understand the different requirements. In a license agreement, the recipient gets rights to copy and use a software application, while in a services contract, the recipient gets a service, like tech support or IT consulting. SaaS agreements are services contracts, pure and simple. They don't call for software licenses.

The confusion, of course, stems from the central role of "software" in software as a service. You can cut through the confusion by asking what the customer will do with the software. If the customer puts a copy of a software application on a computer — downloads it, installs it from a disk, etc. — the deal calls for a license. Copyright law gives the software's owner a monopoly over the right to copy it (to "reproduce" it), so the customer needs a copyright license to make a copy and put it on a computer. But in a SaaS deal, the customer doesn't put software on a computer, or copy it at all. The software sits on the vendor's computer and the customer merely accesses it via the Internet. With no copies, copyright plays no role in the transaction, so the customer doesn't need a copyright license. Rather, the customer needs a simple promise: "During the term of this Agreement, the Vendor will provide the System to the Customer."

3.9 Comparison of Cloud vs. On-Premise in Local Authorities

3.9.1 Cloud

Advantages

- No upfront capital outlay for servers/Cost reduction as servers can be utilised for other endeavours.
- Reduced direct costs i.e. for servers: maintenance, upgrades, electricity, staff costs
- Improved maintenance and upgrade ability.
- Is often very scalable and would be able to deal with new sites/council areas using system.
- Disaster recovery is handled by the supplier – the council does not need to ensure server integrity.
- Mobile device synchronisation is often improved in hosted solutions compared to on-premise solutions i.e. staff delivering services within people's homes.
- Cloud is seen as the future, reducing capital investment and council assets, and is mentioned within the Scottish Government's "Scotland's Digital Future - Delivery of Public Services" as a potential way to increase cost savings and support infrastructure investment such as the SWAN initiative.

Disadvantages

- Software not owned by council – subscription costs are indefinite.
 - Many council policies are pushing to reduce the number of assets that a council has and move towards a model that supports leasing/renting software.
 - Leasing software would allow councils greater flexibility in terms of being able to change suppliers.
 - Leasing may improve council uptake as there is no need to provide rigid business cases for capital expenditure
- Risk if supplier failure and customer data being at risk of loss or destroyed.
 - There will be a Special Condition and technical requirement for all IP to be available to councils if this occurred (Escrow Agreement).
 - Data would be backed up to a certain stage i.e. within the last 24 hours.
 - There is no guarantee that the council would not have a hardware failure, often suppliers have greater resources in terms of available back-ups and fail safes.
- Migration between original system and cloud systems can create compatibility issues between different OS/applications.
 - Infrastructure may need to be changed in order to facilitate a cloud based system however this ensures that it is "fit-for-purpose" and future proofed.
 - Hybrid cloud solutions mitigate this risk to some degree and are widely available in the market place (often a customer can choose what kind of cloud should be used).
- Integration can be more difficult than with on-premise models.

- Technical requirements will include the need for integration to be explained in detail and for suppliers to give current integrations that are available.
- Current on-premise models do not always have key integrations that are successful however a more strategic contract management approach during the lifetime of the framework would resolve this.
- Requires a fast and consistent connection to the internet.
 - Many councils have good infrastructure in place that provides this already.
 - The Scottish Wide Area Network project aims to improve internet access in rural areas, increasing the number of councils that have this available.
- If the council is large, a hosted solution may prove less cost effective than an in-house system.
 - Cost savings would not include those associated with cost avoidance or reduced duplicated work therefore, although direct costs may rise, the system would provide better value for the council.
- There is a perception that cloud computing is unable to provide the same level of security that on-premise can provide.
 - This is often perceived as opposed to actual, however within the technical envelope and Special Conditions there will be mention of security issues and how the supplier deals with these.

3.9.2 On-Premise

Advantages

- On-premise solutions allow for greater control over data and systems management/access.
- Systems tend to allow for more tailoring to specific business needs and allow more modifications to be completed in-house, by trained staff, therefore less reliance on the supplier.
- Perception is that data is more secure when it is kept on premise.
- No internet connection is needed to access the solution.
- Can be more cost-effective as a long term solution as, although there are higher capital/upfront costs, there are usually reduced annual costs.
- Businesses can design their own custom reporting tools on-premise,
- Generally, vendors of on-premise have longer-term experience than vendors of SaaS.

Disadvantages

- Higher upfront installation and set up costs.
 - Councils may acquire budgets for one off costs if they are split between different departments and may prefer this model as it would reduce costs in the longer term. This may be preferred if there are uncertainties with regard to council/department budgets.
- Systems often require to be networked with internal systems/infrastructure with costs/time associated with this requirement.
 - This networking often ensures a higher rate of compatibility and can mean integration is achieved.

- Maintenance that is required means high consultancy/day rates with supplier, may be duplicated across councils.
 - SXL would use contract management to reduce duplication and ensure the councils were paying once for integration work to be carried out.
 - Maintenance fees would be standardised across councils to ensure transparency.

3.10 Cyber-Security

While rapid technological developments have provided vast areas of new opportunity and potential sources of efficiency for organisations of all sizes, these new technologies have also brought unprecedented threats with them. Cyber security – defined as the protection of systems, networks and data in cyberspace – is a critical issue for all businesses. Cyber security will only become more important as more devices, “the internet of things”, become connected to the internet. There are many forms of cyber-security, including cyber crime, cyber war, and cyber terror. This strategy will consider cyber crime as the main threat to Local Authority ICT procurements.

Cyber crime is conducted by individuals working alone, or in organised groups, intent on extracting money, data or causing disruption, cyber crime can take many forms, including the acquisition of credit/debit card data and intellectual property, and impairing the operations of a website or service.

Cyberspace is unregulated and cyber crime is increasingly simple and cheap to commit: the Fortinet 2013 Cybercrime Report found that an effective botnet – a network of private computers infected with malicious software and controlled without the owners' knowledge – can be established for as little as £420. Cyber criminals can now even buy off-the-shelf hacking software, complete with support services. Congruent with the rapid pace of technological change, the world of cyber crime never stops innovating either. Every month, Microsoft publishes a bulletin of the vulnerabilities of its systems, an ever-growing list of known threats, bugs and viruses

Cyber criminals operate remotely, in what is called ‘automation at a distance’, using numerous means of attack available, that broadly fall under the umbrella term of malware (malicious software). These include: Viruses, Worms, Spyware, Trojans.

There are also a number of attack vectors available to cyber criminals that allow them to infect computers with malware or to harvest stolen data: These include: Phishing ,Pharming , Drive-By .

Therefore an effective cyber security posture should be proportional to the risks faced by each organisation, and should be based on the results of a risk assessment.

Critical Issues – Cyber Security looks at the cyber security challenges facing business today and proposes a fully structured approach to achieving both cyber security and cyber resilience. All organisations face one of two types of cyber attack:

They will be **deliberately attacked** because they have a high profile and appear to have valuable data (or there is some other publicity benefit in a successful attack).

The attack will be **opportunistic**, because an automated scan detects the existence of exploitable vulnerabilities. Virtually every Internet-facing entity, unless it has been specifically tested and secured, will have exploitable vulnerabilities.

Cyber criminals are indiscriminate. Where there is a weakness, they will try to exploit it. Therefore, all organisations need to understand the cyber threats they face, and safeguard against them.

As well as protecting your critical assets, customer details and your operating systems, effective cyber security can also help organisations win new business by providing assurances of their commitment to cyber security to their supply chain partners, stakeholders and customers.

3.11 ISO 27001

In order to achieve real cyber security excellence, today's organisations have to recognise that expensive software alone is not enough to protect them from cyber threats. The three fundamental domains of effective cyber security are: people, process and technology.

Therefore, as a minimum Scotland Excel will ask potential ICT service providers to be ISO 27001 compliant. This is the internationally recognised best-practice Standard for information security management. It forms the backbone of every intelligent cyber security risk management strategy. Other standards, frameworks and methodologies need ISO 27001 in order to deliver their specific added value. Implementing ISO27001 will help you protect your information assets in cyber space, comply with your regulatory obligations and thrive by assuring your customers and stakeholders that you are cyber secure

4 Threats and Risks

As with all commodity strategies ICT is no different in identifying threats and risks. The Cyber security risk issues have been detailed in earlier sections within this strategy however other risks are prevalent within the ICT category.

Outsourcing provides an effective ways to cut cost, launch new business venture and improve efficiency, however, ICT outsourcing can lead to an information security risk incident that might be difficult to manage and mitigate. Hence, research is required to determine the information security risk factors, consisting of threats and vulnerabilities; and to discuss their criticalness in ICT projects.

Various studies for private companies and government agencies show that the most critical threats are system error and ICT failures; and the most critical vulnerability is insufficient attention to human factors in system design and implementation. Private companies and government agencies should be able to identify critical information security risk factors and address them appropriately and effectively during the procurement process.

ICT projects are regularly highlighted in the media and press as failing to deliver and failing to meet expectations.

A recent Standish Group report in ICT procurements shows:

Projects satisfactorily completed on time and within Budget	37 %
Projects Cancelled during Implementation	21%
Completed projects compromised significantly –cost and time overruns or failure to meet users’ needs	42%

The main reasons for the failure factors are: lack of user input, incomplete specifications, lack of resources, lack of executive management support, unrealistic expectations, new technology superseding and making obsolete the procurement project and lack of stakeholder engagement. ICT procurement projects have unique characteristics which need “special attention” such as assessment of system functionality against business needs, changes to working practices necessitated by new systems, migration and handling of data from existing to new systems, maintenance services and support, user acceptance testing, licence terms and intellectual property rights.

Therefore it is essential that Scotland Excel continue recognise these and mitigate against them in any future procurement activity .This has worked well in the recent frameworks for Customer Service Platform and On-line School payments but it is essential we continue to review this in the future as we expand the category portfolio.

5 Conclusion

As detailed in this strategy access to ICT has grown rapidly, a development enabled by changes in technologies, polices and markets. Increased access has unleashed the transformative potential of ICT, affecting the ways in which people, governments, and businesses interact. The changes in those interactions, and ICT itself, promise to enhance economic opportunities, improve delivery of services, enhance government efficiency and transparency, and accelerate social change. The local government sector in Scotland and Scotland Excel has recognised this and been supportive, however defining the change program will need strong leadership to co-ordinate a collaborative approach to ensure the priorities are targeted, sustained and realised. Furthermore, to be able to reap the benefits of ICT growth and its transformative potential, Scotland Excel need to continue to support the development of ICT skills by their people and adopt ICT themselves for better delivery of education, health, social care and other corporate services to enhance efficiency and transparency. This will be a difficult as reality of austerity and local government budget cuts are delivered through 2016 but a longer term view of ICT is required to ensure our councils and citizens are well positioned as we move into the next decade.