Leveraging Technology

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5.1 Introduction

Small- and medium-sized practices (SMPs) are heavily reliant on technologies to provide efficient, cost-effective, high-quality, and profitable services for their clients. While an SMP is unlikely to have a dedicated IT Department or Help Desk, it still has to perform all the same tasks as a large organization and should ensure that those tasks are allocated to someone within the business or to an external service provider.

Effective selection, implementation, and management of technologies, as well as training employees to use software solutions, are fundamental to the success of any firm.

When introducing or reviewing a technology strategy, a firm needs to first define what it wants it to do. Then, find a system that will achieve most, if not all, of that.

Technology will assist a firm in, among other things, the following aspects:

- Efficient processing and scheduling of work;

- Enhancing the presentation of the firm's work;

- Storing and retrieving data efficiently and with adequate disaster recovery mechanisms;

- Maintaining both records and contact with the firm's client base;

- Sharing data with their clients;

- The communications process;

- The marketing of the firm and their value proposition; and

- Managing time pressures.

Just some of the core applications relevant to the effective use of technology include:

- A practice management system which records financial details about the firm's performance, including work in progress and debtor levels, costs, profit, and investment in fixed assets;

- A diary or personal organizer software where multiple people have access to a single diary;

- File-management and archival software;

- Client relationship management (CRM) software;

- A general ledger program capable of handling your processing of clients' financial data (this should be regularly updated, and have templates which conform to statutory accounting requirements);

- Time-recording software (generally, this comes with integrated billing modules for raising invoices as well as monitoring time and productivity by person and by client);

- Word-processing and spreadsheet capability;

- A database system capable of creating your own personalized applications (optional);

- Internet connections;

- A web page for your firm;

- A fixed asset system, ideally with direct integration to the client ledger, which calculates amounts such as depreciation and gain or loss on disposal;

- Software to calculate asset and liability values for leased assets (optional); and

- Speciality applications to assist firms to automation of many procedural tasks.

There continues to be an increase in the number of suppliers focused on information technology (IT) solutions for accountancy firms and their small business clients. As a result of new cloud solutions, businesses are embracing computerized accounting, resulting in the changing role the practitioner plays and low-end tasks such as bookkeeping, reconciliation, and monthly report preparation being automated.

SMPs need to also acknowledge how technology is changing regulatory oversight programs. Regulators are adapting and building systems to automate the collection and transmission of data with firms and enhancing their data analytics capabilities to strengthen their oversight programs.

In a climate of ongoing change it is critical that practitioners ensure that they have adopted best practices in respect of their technologies.

This module examines contemporary practice issues related to leveraging technology within a firm and emerging technologies.

5.2   New and Emerging Technologies

IT continues to evolve rapidly with faster, more reliable, and cheaper Internet connections and fundamental changes in how applications are developed, deployed, implemented, and used all across the world.

Businesses and accounting firms are now using the Internet as an application platform. These technologies are commonly referred to as Web 2.0, and have led to the development and evolution of web-based communities and hosted services (such as social-networking sites, video-sharing sites, wikis, and blogs).

Cloud technology is already well established and having an impact on how firms are doing business. Business and consumer acceptance is being driven by readily available cloud applications allowing you to access software, data, contacts, and calendars from whatever device you are on. The impact on business and accounting firms is substantial and it is already changing how accountants interact with their clients and staff.

Research indicates that investment in technology is a key driver of productivity in the accountancy sector.

Existing and emerging technologies provide a solution to automate tasks, reduce data processing, and predict clients' future needs. With research regularly indicating that a new generation of clients is seeking to only interact with their accountant via technology, some firms may face the challenge of the risk of not investing sufficient time and resources to keep abreast of emerging technologies. The risk of not investing in technology will also impact a firm's ability to attract and retain staff who see technology as an enabler to adding value to clients.

5.2.1   Cloud Computing and Hosted Applications

Cloud computing facilitates anywhere/anytime access to real-time data. The benefits include improved efficiencies, increased availability, elastic scalability, fast deployment, and low upfront costs. Cloud providers offer services using three models.

- **Software as a Service (SaaS)**

    SaaS (or Application Service Provider [ASP] application) is having a significant and rapid impact on how accounting firms are doing business and interacting with their clients by providing a cheaper and easier technology solution.

    Instead of firms spending time synchronizing data, a firm may now work on the same sets of data online.

    Cloud-computing applications are hosted by a service provider and accessed by customers over the Internet, often with a simple web browser but sometimes with a small application automatically downloaded from the hosting provider.

- **Platform as a Service (PaaS)**

  PaaS is a cloud solution for the creation of applications. In this model software, developers have access to computing platforms including operating systems, programming language, and execution environments without the underlying infrastructure costs.

- **Infrastructure as a Service (IaaS)**

  IaaS is the most basic of services and refers not to a machine that does all the work but to a cloud facility where a business has access to extra storage space and data centers.

  The cloud service provides fundamental computing services (such as a server, storage, and a network as an on-demand service).

  In this model the cloud user is responsible for maintaining the operating systems and applications software.

Hosted applications have a number of advantages:

- The infrastructure required by the end user can be quite simple: often just a computer capable of running a web browser and Internet connection. Tablets, low-cost web books (cheap laptops), and smartphones have emerged to capitalize on these new applications.

- This also allows the firms and the employees to use their own devices, which has an overall effect of lowering the firm's capital outlay on infrastructure.

- Software deployment is eliminated. There is either no software installation on the user's workstation or a small application is automatically downloaded and installed. Users don't undertake a complex installation procedure. Furthermore, updates are automatically loaded, allowing staff to use the latest versions of the software applications.

- The hosting company hosts the data, and has responsibility for security and backup. Security is much higher than the measures small businesses can usually afford if doing directly. Premises are highly secure and sophisticated security systems are deployed. Users are released from the need to provide security and regularly backup.

- Users are free to access the application at any time of day from any location where an Internet connection is available. This enables staff in an SMP to work where it is most productive (for example, working from the client's office, home, or remote office).

Some concerns exist with hosted applications:

- Hosting companies generally don't accept liability for any security breach. This concern is mitigated by the significant investment of most hosting companies in ensuring highly secure premises and application/data access.

- Accessing or downloading data, should the user terminate the service or the provider cease business.

- Often, service agreements try to exclude the supplier from liability for almost everything. Potential confidentiality and security issues arise when staff remotely access data from their own devices. Users of cloud solutions do not always ask or realize where their data will be stored and the potential impact of jurisdictional laws.

In response to the rapid uptake of cloud solutions, governments around the globe are developing data protection rules to provide businesses with clarity on governing laws where information is stored, shared, and accessed. Many countries have privacy legislation that regulates the collation, storage, and use of data relating to individuals, including in some instances the prohibition on cross-border data transfers. Some local

professional bodies have developed guidance or standards, in order to obtain an understanding of where data is held and provide a level of assurance that data is secure and periodically backed up to a secondary location.

Despite these concerns, cloud computing is transforming how accountants and clients work together.

Hosted accounting applications may overcome problems such as inefficient transfer of information and amendments. Since the application is online, the accountant and their client can access the same data at the same time. This means that any adjustment made by one will be seen by the other. Further, the inconvenience of moving data to and fro is eliminated.

Providers are continuing to develop greater functionality. For example, a client may not know the coding for a particular transaction. A question could be posted for the accountant who, by clicking on the link, could review the transaction and either respond to the client's query or code the entry directly. During year-end work, accountants could mark for the client's attention entries that appear to be incorrectly processed.

Hosted accounting applications that incorporate alert systems may enable the accountant to see trends occurring in real time. The accountant can then contact the client to rectify the issue of concern before performance deteriorates. For example, if receivables collections start to wane, the accountant may see this trend and contact the client to suggest increasing collections activity. Hosting applications are also being developed that can predict client needs and immediately flag clients that will be impacted by changes to taxes or regulations.

Hosted applications generally require a fast and reliable Internet connection. Even where the best infrastructure is available, Internet connections can fail, connection to the application is lost, and productivity suffers. To overcome this risk, developers are creating "stateless" applications which, while hosted, can continue to operate when the connection is lost. A synchronized version of the application and data are stored to the local machine. When the connection is lost, processing can continue on the local machine. Once the connection is reestablished, the application and data between the hosting platform and the local machine is synchronized and processing continues on the hosted application.

Cloud computing allows businesses and accounting firms to rapidly upsize or downsize without the cost of expensive network and hardware solutions.

Clients can access their data and financial results from anywhere, allowing firms to provide services outside traditional geographical boundaries.

5.2.2   Social Networking/Online Communities

Generally, users can join networks such as Facebook, LinkedIn, Twitter, and others organized by geographic location, workplace, or interests. The use of particular social networks can change from one country or region to another. Users can add friends or connections and send them messages, or they can update their profiles and notify their friends or connections about their activities.

Many businesses try to limit access, as they are concerned about productivity loss in the workplace. Some sites (such as LinkedIn) target business people directly to create a network of colleagues that can be used as a referral network or to find a trusted individual or company with sought-after skills. Some firms are creating their own groups within these social networking sites to stay connected with current and past staff.

It is likely that social networking and other communication platforms (such as instant messaging) will become important platforms to communicate internally and externally. Businesses will increasingly use social networking sites to connect with groups of individuals who may be attracted to their products. The IFAC Global Knowledge Gateway is a perfect example of a tool developed to encourage knowledge sharing by bringing together news, views, resources, and thought leadership for the worldwide accountancy profession, with tailored content for different audiences such as SMPs.

5.2.3 Communications Technologies

A clear influence of the Internet (and technological change generally) is the revolution in communications technology. In less than 20 years, communications have been transformed, with significantly lower costs and widespread, all-pervasive availability. The downside has been the expectation of an instant response. This needs careful management in firms to ensure that staff do not become distracted responding to almost constant communication, with a resulting loss of productivity.

Many new communications platforms have emerged. Voice over IP (VoIP) is continuing to transform telephone communications. VoIP is the transmission of voice/sound communication using Internet technology. The quality of VoIP calls continues to improve, although some systems can suffer from latency (delay) caused by poor-quality Internet connections between the callers.

Products such as Skype and FaceTime facilitate free or very low-cost voice communication that can be invaluable in providing free communications between team members who are at different locations or with clients who are located in other cities or countries. Video calls are now also commonplace, although they require connections with greater bandwidth.

Instant messaging systems are also heavily used, particularly by younger people. Mobile phones are used throughout the world and costs are continually falling as there is more takeup. These systems can be helpful in a business setting to quickly respond to a simple question. Use should be carefully controlled so that the potential for constant interruption does not hamper productivity.

5.2.4 Wikis—Collaborative Knowledge

A wiki (defined by Wikipedia, the most famous wiki) "is a page or collection of web pages designed to enable anyone who accesses it to contribute or modify content, using a simplified markup language. Wikis are often used to create collaborative websites and to power community websites. The collaborative encyclopaedia project Wikipedia is one of the best-known wikis. Wikis are used in business to provide intranet and knowledge management systems."

Few accounting firms have created wikis. However, they possess the potential to improve productivity by allowing people to share knowledge by building document precedents, defining processes, and recording technical knowledge. It is unclear whether wikis will deliver these benefits and whether the loss of productivity to maintain the wikis will be justified. With the clients themselves also burdened with a lot of communication, it is questionable whether they will read the firm's content.

5.2.5 Multimedia and Video Sharing

For over 50 years, generations have become accustomed to using pictures, video, and sound to absorb information and to communicate. As Internet bandwidths continue to increase, video and rich web-based multimedia environments have emerged.

Graphically rich gaming platforms have created online environments where millions of people can interact and work collaboratively on projects. Some businesses are now licensing these platforms to create virtual workplaces which enable teams to work collaboratively regardless of geographic location.

Video-sharing sites such as YouTube permit the simple upload and sharing of videos. Podcast technology enables the simple creation and sharing of sound files.

Accountancy firms often use multimedia in web-based video training for their team members and to improve the financial literacy of their clients.

It is only a matter of time before multimedia will affect how SMPs engage with their clients. Many firms have incorporated graphical presentations to assist clients to understand their financial results. A few are experimenting with the use of videos and podcasts to provide information to clients on business management and the latest legislative changes.

5.2.6   Blogs

A blog is a website, generally maintained by an individual or a company, which comments on a particular subject. Often readers can respond and post their own thoughts on the blog. Blogs could be used by SMPs to outline business management ideas and create an additional medium to highlight expertise and to further engage with clients and prospects.

5.2.7   Freeware and Open Source Applications

Freeware is software that is distributed for free. The supplier often achieves revenue from advertising or encouraging the purchase of other products. Some freeware applications are "open source" applications—built by developers who wish to build quality applications and learn from collaborations with like-minded developers.

Internet browsers are the most common freeware. Microsoft's Edge (which replaced Internet Explorer), Mozilla's Firefox, Google's Chrome and Apple's Safari are all free. Most online email systems are also free, such as Microsoft's Hotmail and Google's Gmail.

Take care when considering freeware for any critical firm applications. Review issues such as the availability of support and the reliability of the product. Generally, avoid freeware unless it is well known with a strong reputation for quality, functionality, and reliability.

5.2.8   Business Intelligence Software

Business intelligence (BI) software is designed to analyze business data to better understand an organization's strengths and weaknesses and improve decision-making. Sometimes the software is also referred to as business analytics, big data, or predictive intelligence. Despite what the software is called, the overall objective is to assist businesses to make better decisions.

New Practice Management software now includes common features such as online and predictive analytics and benchmarking analysis, allowing firms to be proactive in predicting a client's future needs. By harnessing and aggregating data already on hand, such as financial reports and tax returns, it can identify actionable and value-added business insights.

5.2.9   Data Analytics

Data analytics is the process of examining data sets in order to draw conclusions about the information they contain, increasingly with the use of technology or specialist software.

For practitioners, data analytics provides an opportunity to expand and deepen the analysis of a client's operations. For auditors, data analytics provides an opportunity to improve the quality and value of audit.

A variety of software is now available making it increasingly viable for even SMPs to implement data analytics.

5.2.10   Artificial Intelligence

Artificial intelligence (AI) is intelligence exhibited by machines whereby a computer program mimics human cognitive functions, has self-learning capabilities, and enhances problem-solving. Often what is called AI is actually technology efficiency and automation.

There have been fears that AI may replace the role of the accountant; however, innovative firms are investing in AI software that can predict the future needs of their clients using mathematical rules or algorithms.

The new way of thinking about AI is to see it doing time-consuming tasks, freeing up time for accountants to do the serious thinking and to exercise professional judgment on more complex matters. Any tasks that are mostly repetitive can be automated, such as invoicing or personal expense reconciliation, with customer receipts being turned into a machine-readable format, encrypted, and then allocated to an account. The software platforms can self-learn while tracking invoices, and sales and costs data.

AI is about knowledge, not just data, and will complement the evolution of accountants from number crunchers to value-added advisers.

5.2.11   Development, Customization, or Off-The-Shelf Software

Off-the-shelf software provides practitioners with access to affordable and sophisticated software because the cost of development is shared. But for some practices the software may not meet the existing business processes or requirements and customization may be considered.

Customizing software to match your business processes and the functionality you seek carries with it long-term risks, such as problems with maintaining, updating, and upgrading software; costs of supporting customized software; and higher training costs. It is usually better to rely on standard functionality, which may mean reconfiguring your business processes to match the software rather than customizing the software.

A new emerging option is to use bolt-on apps which draw data from a core database and facilitate add-on functionality. Section 5.5.27 examines integrated software suites and bolt-on apps in more detail.

5.2.12   XBRL and Standard Business Reporting

XBRL stands for eXtensible Business Reporting Language and has become a global standard for exchanging business information. XBRL, or standard business reporting as it is also referred to, is a standard approach to online or digital recordkeeping that adopts a standard taxonomy and tags data in a way software can read and process.

XBRL-enabled software incorporates standard terms that are used in government legislation and reporting. These terms are then tagged or referenced to terms used in accounting software creating consistency for business and users of the data. Software uses XBRL tags to process information in an intelligent way, allowing end users to easily compare data from multiple sources. It also reduces data extraction and analysis time and ensures that users interpret the reported data in the same way.

In many jurisdictions, XBRL is standardizing the way firms and businesses share data with government and stakeholders. XBRL-enabled software can streamline internal and external financial and business reports and regulatory compliance programs, and expedite the turn-around time for loans or completion of mergers and acquisitions.

For most SMPs, benefits are immediate, by reducing time-consuming activities, such filling out government compliance forms, reducing the need to re-enter data into different documents or systems, or interpreting different stakeholder's requirements. Electronic lodgment systems are also providing additional layers of security for data sharing.

5.3   Developing a Technology Strategy

Few SMPs have a formal technology strategy or plan that's reviewed on a regular basis. Firms should consider establishing a technology plan and budget that is reviewed and updated at least annually. The firm's management team or partner group should review and approve the plan. Once approved, the partner

or manager responsible for technology should be free to execute the plan and seek additional approvals only when a material deviation from the plan is required.

Undertaking system acquisitions without a plan is dangerous and can result in poor decisions, resulting in increased cost, loss of productivity, and loss of benefits that could have occurred if better decisions were made. Without a plan, your firm may buy what the supplier wants to sell rather than what your firm needs. Your plan needs to consider possible future hardware/software acquisitions and communications, as well as the elements you need now.

Firms need to make an objective assessment of the software and hardware options. Suppliers will be active in promoting the benefits of their solutions and you will need to consider different alternatives. Don't let a supplier control the evaluation process. Take control of the selection process and subject all suppliers to the same evaluation criteria. Only in this way can a fair assessment be made of the solutions and the value to your firm.

The elements of a technology plan are as follows.

5.3.1   Snapshot of Current Position

Review your firm's current technologies and summarize the following:

Hardware deployed	All hardware, noting main specifications, age, maintenance plans, and recommendations for upgrade or replacement.
Software deployed	All software applications, noting versions and maintenance plans. Software should be deployed in accordance with the applicable software license requirements. These requirements specify the terms of use for an application and define the rights of the software producer and end user.
Technology management structure	The internal and external resources used to maintain your firm's systems, highlighting the skills of the individuals, the time required, and the main areas where time is spent. Improvements needed would also be highlighted.
Expenditures	All costs, including internal labor and insurance costs.
Outstanding projects	Highlight the resources required, timelines to achieve successful completion, and any barriers to completion.
Strengths and weaknesses	Your firm's technology achievements and areas where your firm has struggled, highlighting the reasons behind the positive and negative results.
Problems being experienced and desired improvements	Seek the views of all staff. A survey could be used or groups of staff interviewed to discover their issues with the current system and their thoughts as to how it could be improved. A firm may also consider seeking the views of the clients who interact with the software.

5.3.2   Update Knowledge and Summarize Opportunities

For many accountants, especially those who have little personal interest in technology, ensuring that they keep up to date with the latest developments in firm technologies can be difficult. Supplier or accounting body conferences, websites, journals, and newsletters can provide useful updates. This section of the plan should summarize new developments in hardware and software and their potential benefits.

5.3.3 Alignment with the Firm's Strategy

Ensure that the technology plan is aligned with the overall strategic plan for the firm. Growth targets, number of offices, service offerings, and standards will all drive the technologies that your firm needs to deploy.

In addition, your firm may seek to harness technology developments to improve its efficiency, client service, or profitability. This could include remote access, document management and scanning, multiscreens, or website improvements.

Summarize your firm's strategic technology objectives and clearly prioritize them to focus on projects that have the potential to deliver the greatest outcomes.

5.3.4 Summarize the Projects

Having established your firm's strategic technology objectives, the next step is to determine the projects that are required to achieve the desired outcomes. Develop a plan and justification for each project, including:

- The benefits of the project;

- The tasks required to complete the project;

- The resources and key personnel required;

- Any hardware/infrastructure acquisition costs;

- Any software acquisition costs;

- Any implementation and training costs (including internal labor costs);

- Any ongoing maintenance, training, and associated costs;

- The best person in the firm to drive the project;

- The key milestones to be tracked to ensure that project overruns are discovered early and quickly rectified;

- Whether the project is dependent upon other projects, so that it cannot be started until part or all of another project is completed; and

- How long the project will take?

By developing a detailed technology plan and budget, firms position themselves to harness technology developments and deliver optimum outcomes to the firm and its clients.

5.3.5 Identifying Suitable Products

Undertaking system acquisitions without a plan is dangerous and can result in poor decisions resulting in increased cost, loss of productivity, and loss of benefits that could have occurred if better decisions were made. Without a plan, your firm may buy what the supplier wants to sell rather than what your firm needs. Your plan needs to consider possible future software acquisitions as well as the software you need now.

With a plan, your firm is able to filter supplier offerings and concentrate on those that are immediately important. Find out what benefits a product will bring to your firm before you accept any offer from a supplier.

When considering a product, ask the suppliers for details of the number of its users, the size of the five largest users, and the size of the five smallest users. This will indicate whether firms of similar size to yours are successfully using the product.

Ask for a summary of any client satisfaction surveys relating to the product, post-implementation reviews, and common challenges faced by clients.

5.3.6 Selecting a Supplier

Purchasing application software is a long-term investment. The cost of implementation, training, and data conversion is significant and prevents firms changing regularly. In purchasing software, your firm is establishing a long-term relationship with the supplier.

Similarly, the same considerations need to be given to selecting other suppliers, such as hardware, Internet, and telecommunications.

You need to be confident that the supplier will continue to improve the product to leverage technology developments and increase firm efficiency, profitability, or client service.

Suppliers should articulate their vision for their business and for the accounting industry. Your supplier should also have a road map for product development so your firm understands new products and enhancements that are being developed.

Issues to consider when choosing a supplier include:

- The quality of its executives. Look for experience in and/or knowledge of the accounting industry. Also, how consistent is its ownership and the senior management team?

- Its track record. Has it met promises and been consistent with its vision or has it been constantly changing? A poor track record reduces confidence that current road maps and visions will be achieved.

- The supplier's success and profitability. A lack of profitability can affect the quality of product support and future development. In the worst case, the supplier could disappear, bringing potentially catastrophic disruption to your firm.

- Its investment in research and development.

- The personnel that the supplier has dedicated to the product you are purchasing and whether this has changed significantly in the past three years. A significant drop in head count would indicate potential loss of clients or a scaling back of further product development.

- How the supplier engages with its customers. Companies that actively engage with customers and seek their feedback to improve their products and services tend to ensure that they remain closely aligned to the customers' needs and deliver effective products and services.

- Ask the supplier to explain future developments for the product, and review the development road map of the product. Ask for a list of enhancements that users have requested.

- Does the supplier provide an implementation plan that it recommends to its new customers? This will tell you the resources that your firm is expected to commit to the product's implementation. Also ask for a firm timeline for the product's implementation.

5.3.7 Review the Underlying Technologies

Your firm's technology is used to deliver quality and profitable services. Technology should be proven and reliable. You cannot afford nonstandard or unproven solutions that, if they fail, will disrupt your operations and incur significant time and cost to resolve.

Generally, only deploy industry-standard technologies. This usually means Microsoft's operating systems and databases. However, many suppliers have very effective legacy products that use older technologies: in this case, it is important to understand the supplier's plan to upgrade the application to the latest industry standards.

Supplier certification of their products for the latest hardware, operating systems, and database platforms can lag the release of these new platforms by many months. Some software applications also require other applications to be installed on the system. In particular, Microsoft Office can be a prerequisite for some applications. You need to understand the need for and versions of these applications.

Consider product scalability. Your firm should seek assurances from the supplier that the product can handle projected transaction volumes and database sizes without any serious degradation.

The supplier should provide its recommended hardware and other infrastructure configurations to ensure effective and reliable system performance. The cost of all the underlying technology needs to be factored into the overall purchase decision when comparing suppliers who may have different infrastructure requirements.

Also consider system complexity. The more components to the recommended hardware and software solution, the greater the likelihood that one component may fail. It is vital to understand these interdependencies and the consequences of their failure on the entire system.

The requirement to make changes is always inevitable. Whether it is just your website, or practice management, or accounting software. When choosing software or a supplier, consider how early simple changes or tweaks can be made without the need to contract in an expert. The reality is that the more exclusive and customized your solution is, the costlier and more time-consuming the changes will be.

5.3.8   Review the Training and Support Options

Ask the supplier for details of their recommended training program. Many suppliers provide options for classroom training, web-based training, or online self-paced training. Which alternatives are on offer and what is the cost of the initial and ongoing training for team members?

Prompt and high-quality product support is essential. Many companies do not provide support outside normal office hours, which can sometimes cause issues as software updates are often loaded at that time. Some companies have limited telephone support and rely on email/web-based support.

Ask for details of their average response time in relation to the product. Find out the number of people who provide support and their experience with the software. For some applications, such as tax preparation software in peak periods, prompt and reliable support is a key consideration.

5.3.9   Understand the Costs and Contract Conditions

You must review supplier contracts. Occasionally clauses exist that place undue obligations on the customer and attempt to exclude the supplier from any liability, should failures occur. Check the supplier's warranties or guarantees and the obligations placed on customers. There should be a mechanism to deal with breaches. For large, complex contracts, seek the advice of lawyers.

Suppliers are often expert in concealing the overall product cost. Suppliers can price products differently, which makes comparison difficult. It is important to understand all of the costs associated with the product during its life cycle:

- The upfront cost to acquire and install the software;

- The ongoing software maintenance cost (the services included in maintenance should be outlined);

- The cost of future enhancements, if not included in maintenance;

- The cost of hardware and related infrastructure and any additional software required;

- The cost of implementation and training;

- The cost of internal resources that will need to be dedicated to implementation, training, and ongoing internal support;

- The supplier's track record for maintenance price increases; and

- Insurance and upgrade costs.

Assessing these costs for all suppliers enables a true cost comparison over the product's projected life on a discounted cash flow basis.

5.3.10   Seek Testimonials and References

There is no better way to assess a product than to talk to existing customers. Ask for at least three references and ask the references:

- Has the software met their expectations?

- What additional enhancements do they think the product needs?

- Did the supplier meet their promises? Were they responsive and accessible?

- What is the quality of training?

- What has been the quality and responsiveness of support?

- How often and for what reasons do they need to contact support?

Also ask the references about the proposed implementation consultant.

- Did the consultant understand your firm's needs?

- Did the consultant have deep knowledge of the product?

- Was the implementation a success? If not, why not?

- How could the implementation have been improved?

- Did the consultant fulfill all promises made?

5.4   Hardware Options

In establishing a technology platform for their firms, practitioners face a wide array of choices. It can be quite daunting to determine the appropriate hardware/operating system (the software that brings the hardware to life) platform. Having an up-to-date firm technology strategy will assist the assessment process.

5.4.1   Choosing a Hardware/Operating System Platform

For firms not wishing to utilize cloud solutions, there remains a wide array of technology platforms providing a hardware/operating system.

In virtually all jurisdictions, the dominant platforms are Intel–based computers with Microsoft–based operating systems. Other choices include platforms based on Apple computer technology or platforms that utilize the Linux operating system.

The principal factor in determining the appropriate hardware/operating system platform will be the specialty software supplier selected by your firm to provide the core software. Operating outside the supplier's guidelines is fraught with danger. Suppliers will be reluctant to provide support in these circumstances and will often blame the noncertified platform when problems arise.

Yours is an accounting firm, not an IT business (except in rare cases where there is also an IT specialty). Accordingly, you need to be conservative in the selection of a hardware/operating system platform to minimize risk and ensure that support can be easily obtained. For virtually all firms, a platform based around Intel and Microsoft is the proven, low-risk option that will be supported by every software supplier. Any decision to adopt an alternative platform should be taken only after careful consideration of the risk of additional downtime and cost that may result from resolving difficulties.

Consider these two important factors when selecting a hardware/operating system platform:

- Is the platform recommended by your firm's preferred software supplier(s)?

- Is technical support readily available to support the preferred platform?

5.4.2 Terminal Services/Citrix (Thin Client Computing) Versus Traditional Local Area Network (PC-Based or Fat Client Computing)

A further decision is whether your firm should adopt thin client computing over the more traditional personal computer (PC)-based fat client computing.

In the Intel–Microsoft world, thin client computing is generally based on Microsoft's Terminal Services (shipped with various versions of Microsoft's server operating systems) or products from Citrix that provide enhancements to the Terminal Services environment.

In PC-based networks all users have PCs on their desks, which are connected to a file server that allows users to share resources such as printers, email, and files. All the applications are installed on the PC. This means that for an office running 30 applications with 20 team members it will be necessary to perform 600 software installations and have 20 little "islands" to manage. This is called fat client computing since the PC is full of all the software the user needs.

In a thin client model (Terminal Services/Citrix), all users log in to one or more central servers running Terminal Services or Citrix. The users do not need the applications installed on their PC. All software is installed only once on each server and is instantly available to all users.

Fat client computing advantages and disadvantages

Advantages

- Software is generally designed to run in a fat client environment. There are usually fewer problems in installing and maintaining software; however, the complexity comes from the software needing to be installed on every machine.

- All peripherals (webcams, USBs, printers, and scanners) are supported as again these devices have been primarily designed for the traditional PC environment.

- A large number of IT support organizations are familiar with and can support this environment.

Disadvantages

- Because the software is installed on every PC, each machine has to be individually managed. While there are tools to assist in the management of the applications, these are presently generally not cost-effective for smaller organizations.

- Remote access is difficult to set up and generally slow. However, a variety of tools are available that can facilitate remote access including Remote Desktop, which ships with Microsoft Windows. Most often these involve establishing a connection to a PC on the network and taking remote control of the machine.

- Supporting multiple offices and/or mobile users who may wish to share data is difficult and may require workaround such as emailing files backward and forward.

Thin client computing advantages and disadvantages

Advantages

- Application management is easier. Applications are installed on the server(s) rather than individual PCs.

- Remote users (other offices, mobile users, team members working from home) are easily supported. They connect to the servers via the Internet. The applications execute on the servers. The communications link is used to transfer screen display, keyboard and mouse activity, printing, and other peripheral activity such as remote scanning. Accordingly, with a caveat relating to printing and scanning, the communications link required can be relatively slow. Dial-up modems, while not ideal, are usable in this environment.

- The workstation used by the team member can be cheaper as it doesn't need the same processing power that a fat client environment requires since the applications are running on the server not the workstation.

Disadvantages

- Not all applications work. Until recently, software developers generally developed their applications for the traditional PC fat client environment. Some have decided that the cost of certifying and supporting their product in a thin client environment is not worth the effort. Others only provide limited support. Accordingly, it is often more difficult to resolve software issues in a thin client environment. Many software companies lack the knowledge and skills to resolve their product's thin client problems. Clearly, it is critical that the firm ensures that all software they require is certified and can be supported by the supplier in the thin client environment. As software development moves to the web (Internet browser-based applications) this disadvantage should be largely eliminated.

- Not all peripherals work. As most of the devices (USB devices, webcams, scanners, printers, etc.) were designed to function with traditional PCs, there can be problems getting some of these devices to work, which can lead to additional cost and frustration.

- Optimizing Terminal Services/Citrix is more complex. Fewer people have sufficient indepth knowledge of these environments. Specialist skills are required. Often it can be a hidden tweak to the configuration that can make all the difference in system performance.

- Printing and scanning can be slow depending upon the speed of the communications link as these applications can move large amounts of data to and from the remote location. As broadband penetration continues to increase this disadvantage is largely removed.

- Support for multiscreen environments is more complex and less elegant than in a fat client arrangement. Often applications can appear split between screens. Support for multiscreen systems continues to improve with the latest editions of Terminal Services and Citrix.

- The servers become a single point of failure. As all applications execute on the service, should the server not be available no applications are available for the end user. In a traditional PC (fat client) arrangement, users may be able to continue with some tasks without servers being available as the software is loaded locally. It would be limited, however, as most data are stored on the central servers.

- Applications can be quite basic. To optimize the terminal server performance, usually applications are configured with minimum functionality and look. The thin client world is generally not as attractive

as the PC world. Power users can become quite frustrated with a thin client environment as they generally have the desire to customize their setup. Thin client environments heavily restrict the customization allowed.

What to choose

There are clear advantages and disadvantages when choosing between a thin and fat client environment. Some firms run hybrid environments with a traditional PC-based (fat client) environment internally and a thin client environment for remote access (generally when remote access isn't too critical). This has the potential to be the worst of both worlds and needs to be carefully managed.

Factors driving the decision include:

- Software supplier support for the environment;

- The need for multilocations and/or remote access;

- The ability to source skilled IT professionals to support the environment;

- Whether critical peripherals will operate;

- The number and complexity of applications where a thin client environment makes it easier to manage installations and updates;

- The effect on team members of a more austere computing environment generally delivered in the thin client world; and

- Cost differences over the life of the system.

Care also needs to be taken with software licensing to ensure that sufficient licenses are held for the environment implemented.

While there are other thin client environments in addition to Microsoft Terminal Services and Citrix, many software vendors will not support their products on these alternative environments and technical support may be difficult to find. Potential cost savings can be quickly eliminated when problems arise. Unless your firm possesses a high degree of technical skill and is willing to bear the risk of software not being supported or failing, avoid these alternative environments.

5.4.3   Other Hardware/Infrastructure Considerations

Most SMPs lack the technical knowledge and resources to implement and support key infrastructure components. Most use external support organizations, and the appointment of the right organization is therefore critical to the success of the overall IT solution.

Some organizations specialize in supporting accounting firms and often have quite detailed knowledge of the various software applications in the market. Many have worked for the suppliers during their career. Given the reliance of most SMPs on Microsoft's server, database, and workstation operating systems, Microsoft's certification of a support organization provides reassurance that they have a strong understanding of those technologies. Other suppliers with similar certifications may be relevant, depending upon the technology being implemented.

While the support organization will implement and maintain the technology infrastructure, you still need to appreciate the components required to ensure a robust and reliable system.

Cabling and switches

Cabling standards often change with new technology. There is no need to implement the latest standard, which will generally be more expensive. However, cabling is long-term infrastructure. You need to know it

will cope with emerging technologies. Ensure a data cable professional installs it. Many electricians with limited data cable experience install cables which can result in poor reliability and performance due to poor connections or incorrect placement next to other infrastructure.

Switches join the workstation cables to the server infrastructure. It is the point where vast amounts of data are moved. Look for quality switches.

Wireless networks

Wireless networks are increasingly being used, particularly in meeting rooms, where cabling is difficult or expensive to implement and for teams working at a client's premises. Ensure that these networks are secure, since wireless networks can be accessed from a remote location. Some of the low-level security features of wireless networks can be easily broken. It is important to implement the highest level of security.

Wireless networks can be significantly slower than cabled connections. Like other infrastructure, however, speeds and supported distances between devices continue to increase.

Server hardware

Servers are critical components of any system. A server failure can cause significant disruption and loss of productivity. Additional expenditure to gain greater assurance of server reliability is a prudent investment. Many firms prefer "name brand" server hardware, since response times for parts and service technicians may be superior. With workstations, reliability is less critical since only the individual workstation user is affected, should a failure occur.

A key aspect is to configure server hardware with redundant components such as hard disks and power supplies so that, should a failure occur, the operation of the server is not affected.

Laptops and tablets

Laptops and tablets are portable and therefore can improve productivity; however, there are extra complications, particularly with security. Often important client and firm data are stored on these machines. Laptops and tablets need to be effectively secured so that data cannot be accessed, should they be stolen or otherwise accessed.

Look for encryption technologies to protect data stored on hard disks. These should be implemented and passwords stored in a secure area on your firm's main systems in case the passwords are forgotten.

Most of these systems have Internet-access capabilities via wireless networks, which mean there is high risk of infection from malicious software. Install and maintain software to protect systems from malicious attack on every laptop. Failure to protect laptops could expose your firm's infrastructure to attack when the laptop is reconnected inside your firm.

Printers and scanners

Printing and scanning technology continues to evolve at a rapid rate. Multifunction devices that combine printing, scanning, copying, and facsimile services are being adopted in most firms. Key considerations are:

- Does the firm have sufficient printing and scanning resources to ensure that team members do not waste time waiting for print jobs or to use the device?

- Is color printing a requirement? Some firms purchase black and white laser printers for the bulk of their printing with only a single color printer for special jobs when required. Ink for color inkjet printers is expensive and inkjet printers cannot match the speed of laser printers.

- Is privacy a requirement? If so, small printers in individual offices may be necessary but overall the larger, faster general office printers will be more cost-effective and efficient.

- Can the scanner scan both sides of the page, scan to Adobe PDF format, and scan a large number of pages rapidly? This is a critical component of any document management solution.

A further consideration with printers and scanners is whether to adopt a policy of using personal or departmental technologies. Personal printers and scanners are located at the user's workstation and have the obvious advantage that they are easily accessible, while departmental printers and scanners are located at a central location for use by the entire firm or team.

Departmental technologies have the advantage that the firm can afford to invest more and acquire devices that are significantly faster, have more sophisticated features, and are generally more reliable than desktop printers and scanners. A downside of departmental printers and scanners is that, should the firm provide insufficient printing and scanning resources, team members can waste time and become frustrated having to wait for the print jobs or to access the scanning technology. Accordingly, care should be taken to ensure sufficient centralized resources are provided.

On the other hand, desktop printers encourage printing and therefore can negatively impact a firm's initiatives to move to less paper. Each device is generally low cost (due to the need to deploy on a large number of desks). Accordingly, they can be slower and less reliable and inefficient for large jobs. Printer consumables are generally more expensive per page cost compared with departmental technologies. Desktop scanners can support paperless initiatives by enabling convenient access to scanners.

Uninterruptible power supply (UPS)

In many areas, particularly rural areas, power supply can be unreliable. Power spikes can damage hardware and power outages can cause complete system failure. Accordingly, in virtually all firms (even those with reliable power supplies) it is prudent to implement an uninterruptible power supply. These solutions incorporate batteries which, should the power fail, continue to provide power to the system. This enables the system to continue to operate for some hours and allows an orderly shutdown of the system should power not be restored. These systems vary in the length of time they can maintain power and often also incorporate alarms to notify technicians that a power outage has occurred. Ensure that you acquire a system with sufficient battery life to enable a technician to arrive to shut these systems down if power has not been restored.

Energy efficiency

As concerns for the environment and the cost of energy continue to grow, there is an increased focus on the energy efficiency of technology utilized by the practice. Many hardware manufacturers are developing equipment that can operate on low power and can switch off various components when they are not being used for a period of time. Other innovations include controlling fan speeds based on the thermal requirements of a system, more efficient power supplies, and processors.

Moving to a less-paper environment can also achieve significant energy savings ranging from using less paper to a reduced usage of printers.

Firms should also consider implementing energy efficiency policies such as switching off workstations and other equipment overnight and at weekends.

Security

Your firm must implement effective security to control access to its infrastructure and applications. As almost all firms now maintain permanent connections to the Internet, the risk of unauthorized access is significant. Firewalls, either hardware- or software-based, should be implemented; this limits the traffic that is allowed to access your firm's infrastructure.

Team members must have individual username/password combinations. Passwords should not be given to others and should be changed regularly. Team member profiles should control their access to applications

and data. Some workstations, particularly laptops, are now incorporating biometrics such as fingerprint recognition to further enhance security.

Some firms limit Internet access by blocking undesirable Internet sites, which prevents team members being distracted and limits the likelihood of an attack from malicious software. Make sure such measures do not become too restrictive, as it can frustrate team members. Often Internet use is better managed by firm policies and culture rather than a heavy-handed blocking of sites.

With a myriad of data storage devices such as USB drives and portable hard drives, it is almost impossible to fully protect your firm's data from theft by team members. While USB ports can be disabled, USB drives and other devices assist in moving data and providing temporary backups. This emphasizes the need to secure servers so that team members only have access to the data they need for their duties. Often it is also possible to secure data by only allowing access via the application. This prevents people from accessing and copying the data directly.

Develop and communicate clear policies in relation to the removal of data from your firm's premises.

5.5   Software Options

A firm's software is the combination of generic business software with specialty applications targeting the tasks undertaken in an accounting firm. Increasingly, all new cloud accounting software includes "bolt-on" or "add-on" solutions which allow firms to utilize additional software from specialty suppliers which are integrated with the accounting software to improve efficiency and add value.

The applications fall into the following categories.

5.5.1   Operating Systems

Operating systems are the software that bring the computer hardware to life and provide the services that are used by the business software applications. Every computer has an operating system. Microsoft dominates the supply of operating system software to businesses such as accountancy firms. It provides Windows Server software for the system's servers and the desktop Windows operating system for PCs. It is for this environment that the software industry targeting the profession develops its software. It is not recommended that firms move outside the Microsoft world for its operating systems except in special circumstances.

Operating system suppliers, particularly Microsoft, provide regular, often weekly, updates to their software. It is critical that these updates are loaded as they often contain changes to close security holes discovered in the system. Even though Microsoft provides an automatic update service, firms should ensure that a manual check is done on a regular basis to ensure the updates are correctly loaded.

5.5.2   Backup

Firms need to back up systems effectively, so that the systems and data can be recovered in the event of a system failure. Every firm must ensure that adequate on-site and off-site backups are maintained.

5.5.3   Personal Productivity

Word processing, spreadsheets, calendar, tasks, presentations, and email are the most heavily used applications in any firm. This software is designed to improve productivity in performing everyday tasks. Microsoft Office dominates this category; the products are feature rich and have the following distinct advantages:

- Almost all team members are familiar with the software, thereby reducing training costs.

- Files can be sent to external parties with the confidence that they can be easily read and/or edited. (It is better to convert the file to Adobe PDF format if the intention is for the information to be read not edited.)

- Many third-party software applications integrate with Microsoft Office, which improves the productivity from both the third-party application and Microsoft Office itself. Integration of all the Microsoft Office applications with document management systems is common, as with integration between accounts production and other compliance applications and Microsoft Excel.

Many accountants favor spreadsheet applications like Microsoft Excel for preparation of budgets, cash flows, work papers, and many *ad hoc* calculations. Of particular concern is research that has shown that a large percentage of spreadsheets contain errors (Professor Ray Panko, University of Hawaii and others). Issues that can lead to errors include:

- Unintentional formatting where numbers are formatted as text;

- Formulas being overwritten by numbers;

- Incorrect formulas; and

- Incorrect cell references in formulas.

Accordingly, care should be taken in the preparation of spreadsheets and where information is being provided to clients who will rely upon the outputs. It would be prudent for a second person to check the design of the spreadsheet.

While Microsoft's applications are often chosen for the reasons outlined above, it is clear that many team members do not utilize the products efficiently. An ongoing focus on training to ensure the efficient use of these products is critical in maintaining individual productivity. These products also contain functionality that has the potential to improve productivity by the automation of particular tasks. For example, Microsoft Word contains sophisticated functionality that allows documents to be prepared and formatted based on certain criteria. Few firms invest the time to explore this functionality to improve practice performance.

Competitors to Microsoft Office include:

- OpenOffice.org, which is the leading open-source office software suite for word processing, spreadsheets, presentations, graphics, databases, and more. It is available in many languages and works on all common computers. It stores all the data in an international open standard format and can also read and write files from other common office software packages. It can be downloaded and used completely free of charge for any purpose.

- Google Docs, which includes a free web-based word processor, spreadsheet and presentation application, and complementary Gmail (email) and Google Calendar. Google Gears allows users to edit their documents off-line. The benefit of Google's approach is that the documents are stored on the web. The applications have been built for collaboration. Sharing, where people at different locations can edit documents at the same time, is simple. Where only basic functionality is required, this provides a cost-effective way for collaboration, regardless of location.

OpenOffice.org and Google Docs can import and export files with each other and Microsoft Office, although care should be taken with important documents using rich Microsoft Office functionality.

While the zero cost associated with OpenOffice.org and Google Docs is attractive, this needs to be balanced against the advantages of Microsoft Office's applications. Integration with firm software may be a key productivity benefit that should not be overlooked.

5.5.4   Firm Management

Firm management software or CRM (customer relationship management) systems have become the foundation database application, providing a source of truth for client management. Every firm, except

perhaps the smallest solo operators, needs a firm management or CRM system to manage the business allowing core client data to be stored and accessed via one primary database. These systems are a critical tool for all staff who interact or provide services to clients.

For most firms these systems are also used to record time spent on jobs, prepare bills, and maintain accounts receivable. Increasingly these systems are part of the core accounting applications for a practice.

Some firm management systems are integrated to Microsoft Outlook (email and calendar) to create time entries directly from the Outlook calendar and/or will synchronize Outlook contacts with the firm management client database.

Depending upon the system, reports and graphical representations are available which can highlight:

- Productivity of team members;

- Profitability of individual jobs, clients, or work types; and

- Billing and collection performance.

Many systems utilize Microsoft's SQL Server technology. Microsoft SQL Server provides the underlying database for the system. It provides security and is a reliable and scalable database to support businesses as they grow. It provides a rich set of integrated services that enable the user to do more with the data, such as query, search, synchronize, report, and analyze. Often a dedicated server is established to house the SQL Server database; however, for many firms it is possible, depending upon the size of the firm and the services required, for the server to provide the SQL Server platform along with other services, such as file and print or email. A key benefit of SQL Server is that the data are open to be accessed by other applications, thereby enabling greater integration of data and the ability to produce custom reports from the data.

Some firm management systems also provide functionality to manage workflow and assist in capacity planning, helping firms to identify the resources needed to complete the predicted workload for a month or year. Generally, they assist in the allocation of jobs to teams or team members and then provide a means to track the status of a job.

Some firm management systems have expanded to incorporate CRM functionality. This records all interactions with clients and sets alerts for when a client needs to be contacted or an action for the client is required. To benefit, your firm needs to ensure all interactions are captured. Many firms struggle to establish such a culture.

Some firm management systems incorporate data warehouses and business intelligence tools to "mine" the data to reveal insights about the client base, such as the type of work, client industry, and team member combinations that generate the most profitable work.

A significant challenge for small firms is maintaining a database. Information is often missing or outdated. In particular, email addresses are often not recorded or updated. Processes need to be established and followed to ensure that at least annually each client's record is reviewed and updated.

Generally small and larger firms have similar requirements; however, as a rule SMPs should look for systems that:

- Are easy to implement and learn: you cannot afford the time and cost of complex implementations; and

- Have less complex functionality: larger firms generally require greater flexibility in how a system is configured so it can more closely match their operations. Usually the greater the flexibility, the greater the complexity. For most SMPs it is more efficient to trade off this flexibility for greater simplicity. However, you may need to change your processes to match the functionality of the software.

5.5.5 Compliance Services

Accountants use these products to produce financial statements, tax returns, and other documents required by regulators—generally designed specifically for the country or region. Categories of compliance software are outlined below.

5.5.6 Accountants Production Software

This software produces financial statements that comply with the regulations and accounting standards applicable in the firm's jurisdiction. It can often be used to produce management and other reports to regularly update clients about how their business is performing.

Generally the products include a report generator with formats that can be regularly updated as regulatory requirements change. For SMPs, it can be a challenge to learn how to use these report writers to efficiently make changes when required. Some systems integrate to Microsoft Excel, enabling production of graphs and other summary reports.

Originally these products were designed to process ledger entries from source documents. Newer versions have abandoned general ledger functionality in favor of systems that can efficiently import client data and produce financial statements.

Some products facilitate efficient write-up work where it is not effective for the client to maintain their own computerized accounting system. Often these products have interfaces to assist in efficient downloading and processing of bank statement data. Functionalities such as coding memorization build efficiency since all similar transactions can be coded from a single entry.

In some places, small owner-operated private companies have significantly reduced the need to fully comply with accounting standards. Some firms therefore use the basic accounts formats available in their client's small business software and have abandoned the use of accounts production software.

Many accounts production software incorporate asset ledgers to maintain a list of a client's assets and calculate and record depreciation. In some jurisdictions calculation of depreciation is different for accounting and taxation purposes. These systems generally calculate and record depreciation for both situations.

Some accounts production software incorporates functionality that generates and manages the supporting work papers for an accounts production engagement. These systems save time by generating the work paper schedules directly from the accounting data, which team members can then edit.

In some jurisdictions where audit services are required for most companies' accounts, production software is often linked to audit software to enable efficient conduct of the audit process. As SaaS web-based accounting applications emerge, there is potential to further transform accounts production. Historically, the movement of data between the client and the accountant has presented a challenge. Issues arise with the client and accountant using different versions of the software and also ensuring that data in the accountant's and client's systems stay synchronized. Web-based accounting software has the potential to eliminate these issues.

- Web-based accounting systems enable the accountant and the client to share the same data. The need for the client to save the data for sending on to the accountant is eliminated. With appropriate security permissions, the accountant could access the data at any time and make appropriate adjustments. The accountant and the client always share the data so concerns over data being synchronized are also eliminated.

- Web-based accounting systems potentially provide new opportunities for the accountant to assist the client. For example, where clients are unsure of the coding required for a particular entry they

could email a link to a transaction to the accountant who could quickly review it and/or respond to the query or code it directly. Alerts could be also created so the accountant is quickly notified when certain conditions arise.

When considering accounts production software, ask whether it:

- Is capable of producing financial statements that comply with the jurisdiction's requirements;

- Is easy to edit the financial statements;

- Is able to produce graphs and other reports to enable clients' greater understanding;

- Requires an asset ledger;

- Is compatible with clients' accounting systems and will efficiently share data with clients; and

- Requires the system to generate work papers.

5.5.7   Tax Return Preparation

The software for tax return preparation facilitates the production of clients' income tax and other tax documents. These products are usually designed for a particular jurisdiction to meet their regulators' specifications. The systems generally provide an interface that follows the design of the paper form and applies validation to assist in eliminating errors. Your region's legislation will generally determine how complex it is.

A key aspect in most jurisdictions is the ability of the system to lodge documents electronically with the regulators. Often the regulator conducts software and system testing and will only allow software and systems that have met their criteria to lodge documents electronically.

Software suppliers are often challenged by the continual changes that occur to tax and related legislation that needs to be incorporated into the software. This can often lead to product reliability issues as bugs are created from the constant changes or software being late.

Some systems incorporate "tax management" functionality to track the status of a particular document, such as awaiting the client's signature or lodged with the regulator, and can often assist firms to meet specific lodgment deadlines.

Purchasing tax return preparation software from the same supplier as the firm management software generally ensures data integration. This means that client names, addresses, and other information are shared. In some instances bills for return preparation prepared in the tax system can be uploaded into firm management.

Some systems are increasing their use of the Internet to deliver further benefits to firms and their clients. For example, some systems allow clients to perform limited data entry functions or enquire as to the status of a particular document. Other systems provide links to regulator or tax research websites so that team members can quickly access the information needed to complete a document.

In some jurisdictions, regulators are moving to populate tax return preparation systems with client's income and other data held on their systems. This should increase the efficiency and accuracy of tax preparation systems.

Regulators are looking to XBRL to improve the efficiency and accuracy of data collection.

In some jurisdictions, regulators are creating their own web-based systems to facilitate preparing documents online.

When considering tax preparation software, ask:

- Is the system appropriate for the relevant jurisdictions?

- Is the system integrated to your firm's management system, to eliminate duplication of client data?

- Does your firm need software to assist in managing its deadlines with the regulators and to track the status of documents?

- Can the system produce documents efficiently? A firm whose client base consists of a large number of small returns will need greater efficiency than a firm whose client base is a smaller number of larger clients.

- Does the supplier have a good track record in shipping up-to-date, reliable software in a timely fashion?

5.5.8   Company Statutory Records Maintenance and Form Lodgment

In most jurisdictions, companies are strongly regulated. Forms need to be lodged notifying changes in company particulars. Accordingly, software companies in many jurisdictions have developed software to maintain company records and produce the required forms when changes occur. Many produce company minutes and other documents related to changes.

As with tax preparation software, in some jurisdictions, regulators have powers to control aspects of the product design, particularly when the system facilitates electronic lodgment of documents. Software suppliers can be challenged to update software for regulatory changes in a timely and reliable fashion.

Integration with companion firm management software eliminates duplication of data as client names, addresses, and other data are required by both systems. Some systems also produce fees that are uploaded into the firm management system.

In some jurisdictions, regulators are providing web-based applications to facilitate notification of changes online, thereby reducing the needs for company statutory records software.

When considering statutory records software, ask:

- Does the regulator provide a web-based interface that allows efficient processing of changes in particulars, thereby eliminating the need for statutory records software?

- Is the system appropriate for the relevant jurisdictions?

- Is the system integrated to your firm's management system to eliminate duplication of client data?

- Does the supplier have a good track record in shipping up-to-date, reliable software in a timely fashion?

- Are minutes and other documents which don't need lodgment with the regulator needed?

5.5.9   Trust and/or Pension Fund Administration and Reporting

In many jurisdictions, retirement planning and investment management are often conducted in highly regulated trust structures. As well, trust funds and pension funds are heavily regulated. This has resulted in the development of software targeting the administration of these funds. Often these systems incorporate a general ledger as well as an investment ledger. They can have complex calculation engines for actuarial purposes or incorporate complex legislative demands including taxation.

Like tax preparation software, they can be subject to constant legislative change, which can affect product reliability and timeliness of updates. Integration to firm management software eliminates duplication of data.

Some systems incorporate data feeds from banks, stockbrokers, stock exchanges, managed funds, and others to significantly reduce data entry and errors. Many firms use these systems to maintain investment ledgers for other entities that hold investments, such as estates, charities, or individuals.

The system provides a significant lift in efficiency compared with using a combination of spreadsheets, general ledger software, and word processors.

Often these systems can be quite complex and team members with knowledge of the legislation and software are responsible for this area of the business.

When considering trust and/or pension administration and reporting systems, ask:

- Does your firm have sufficient business in this area to justify the investment in the software, implementation, and training?

- Is there sufficient legislative complexity to justify the investment or can accounts production software handle the requirements?

- Is the system designed for your jurisdiction?

- Does the supplier have a good track record in shipping up-to-date, reliable software in a timely fashion?

5.5.10   Audit Automation

Audit automation software is designed to assist in the management and conduct of audits. The products generally contain template audit programs, checklists and templates. Most contain functionality to monitor engagement progress highlighting outstanding tests and queries.

Many systems link to account production systems to generate audit schedules. Adjusting journals are maintained and linked to schedules. Control of sign-off is generally maintained.

Some systems contain sophisticated functionality to assist in assessing risks, materiality, and financial ratio calculations.

Some audit applications are integrated to firm management systems for time and billing.

In some jurisdictions audit is not required from small companies, trusts, and other entities. In these situations, the time required to implement audit automation systems is difficult to justify since audit services are only required for a small number of clients. In other jurisdictions, where audit is required for a larger number of clients, the investment in audit automation software can deliver significant efficiencies.

When considering audit automation software, ask:

- Do you have sufficient audit business to justify the investment?

- Do the template programs match the type of client audited and the audit standards of your firm?

- Does your firm have team members who will be able to implement, customize, and manage the software?

- Does the software provide simple interfaces to your clients' accounting systems?

5.5.11   Statistical Sampling

A further aspect of auditing and forensic accounting is the use of statistical sampling software. This software has the capability of importing data from accounting systems and then by using complex algorithms can:

- Generate transaction samples for review by audit team members;

- Highlight unusual transactions for detailed review; and

- Unlock unforeseen trends in the data.

This software can significantly improve the efficiency of the audit process and improve the ability to uncover possibilities of fraud or unusual trends. It can also be used for tax investigation work.

Issues to consider in purchasing statistical sampling software:

- Does the practice have sufficient business in audit or forensic accounting to justify the investment required to effectively implement the software?

- Does the software have the capability to import accounting data from the firm's key clients' accounting systems?

- Will the system generate statistical samples that comply with the auditing standards of the firm/ jurisdiction?

- Will the documentation produced by the system offer enough audit evidence to be able to pass an audit quality test?

5.5.12 Insolvency Management and Reporting

Insolvency management software generally contains a general ledger to record trading activity; a system to manage assets through to ultimate realization and manage creditors and other claimants; and functionality to meet the reporting requirements to regulators, creditors, and others.

Many incorporate task management and document management systems to record all the work and documentation associated with an engagement.

These systems are often expensive and only bought by specialist insolvency firms.

When considering specialist insolvency management software, ask:

- Does your firm have sufficient insolvency business to justify the investment required?

- Does it meet the legislative and court requirements of the relevant jurisdictions?

5.5.13 Advisory Services Software

All SMPs endeavor to provide additional advisory services to assist clients to improve their business or to ensure that they are effectively planning for taxation and other costs. The following software products can assist in the provision of these services. Some include functionality for two or more of the categories listed below.

5.5.14 Enhanced Reporting

Often the reporting provided in small business accounting software is limited. The reports may not have been designed with small business people, who have limited accounting knowledge, in mind. Accordingly, products have emerged that integrate or download data from small business accounting software and generate simple, easy-to-interpret reports. These summarize key financial indicators and use graphics to emphasize key points.

When considering enhanced reporting software, ask:

- Can the system easily import data from your clients' small business accounting software?

- Will your clients interpret the reports easily?

- Will the reports create a positive image of your firm?

- Can the reports be easily customized?

5.5.15   Benchmarking

These systems provide reports to clients so that they can compare their business performance with similar businesses. Often the benchmarks include both non-financial information as well as financial information. Some systems are industry-specific and provide detailed benchmarks in areas such as sales and profitability of individual product lines. Other systems are more general and aim to provide benchmarks that follow the financial statements for the business.

A key consideration is whether the benchmarking system has sufficient samples of comparable businesses (location, size) in the industries where benchmarks are sought. A limited sample size can severely limit the value of any benchmarks produced. In addition, industry classifications are critical. Two businesses in a similar industry grouping may be significantly different—for example, companies in the construction industry can be involved in building high-rise commercial premises, residential homes, or roads and bridges. It is important the benchmarks correctly reflect the specific business of the client as the results may be misleading.

When considering benchmarking software, ask:

- Are benchmarks available for the industries applicable for your firm's clients?

- Are sample sizes large enough to produce effective benchmarks?

- Are the benchmarks applicable to the client's business?

- Is it easy to extract the required data and create benchmarks?

- Are reports easy to understand?

5.5.16   Budgeting

Many firms do not use budgeting software and rely upon Microsoft Excel for budget preparation. However, using electronic spreadsheet software is prone to error due to:

- User-created formulas that are incorrect;

- Data being entered into incorrect rows or columns. Numerical information can sometimes be entered as text;

- New information requiring reformatting of rows and/or columns; and

- Professional reports that have to be manually created. It is a complex exercise to create a spreadsheet that accurately produces a budgeted cash flow, profit and loss, and balance sheet.

Specialist budgeting software often contains data entry screens to ensure that all the information required to calculate the budget is correctly entered. For example, details of finance agreements can be entered, which the software then interprets to ensure that the treatment in the budget is correctly calculated and shown in the appropriate period. In addition, specialist budgeting software contains calculations to ensure that the budget is correctly prepared. For example, a change in the number of days accounts receivable may be outstanding will result in a recalculation of cash inflows across periods including the appropriate lags that may relate to taxation amounts included in receipts.

Accordingly, errors in producing budgets with specialist budgeting software are significantly reduced when compared with electronic spreadsheets or manual calculations.

When considering budgeting software, ask:

- Do the calculations take account of the relevant taxation and other regulations?

- Can the system import data from the clients' and/or your firm's accounting system?

- Can budgets be prepared for the years and periods required? Is the functionality flexible enough to meet the needs of each client?

- Are the reports produced easy to interpret?

5.5.17   Scenario Planning

This helps a client to understand what the key drivers of their business are. Generally, financial information is imported or entered from the client's financial statements. The system then permits key drivers for the business to be modified so that the financial effect of the change can be observed. Many products also provide "work-back" capabilities where the desired financial result is entered and the system highlights the changes required to the key drivers in order to achieve the desired financial result. Most products highlight key financial ratios to further assist clients to understand the importance of regular reporting and monitoring of critical financial indicators.

Many reports are produced such as break-even analysis reporting or key performance indicators and ratios.

In some jurisdictions, financial institutions use this software to assess the creditworthiness of businesses. These products can also help firms assist their clients in business planning, loan applications, and business valuations.

When considering scenario-planning software, ask:

- Can the system import data from the clients' and/or your firm's accounting system?

- Do the calculations take account of the relevant taxation and other regulations?

- Can multiple scenarios be prepared and stored for individual periods, and can years and periods applicable to clients be established?

- Are reports produced easy to interpret?

5.5.18   Business Planning

Firms use business-planning software to assist a client to compose a plan for their business. The software generally contains template documents and spreadsheets and provides examples of text that can be used for different types of businesses.

Often business-planning functionality can be found in scenario-planning software and enhanced reporting software.

When considering business-planning software, ask:

- Are the templates applicable to the relevant jurisdictions?

- Are the templates applicable to the client's business?

- Are the templates of high quality?

- Is the plan generated of high quality?

5.5.19 Business Valuations

This software incorporates models to help accounting firms assess the value of businesses by accessing the most up-to-date market intelligence to assist clients in decision-making. Many of the software solutions feature real-time industry benchmarks. Some products include questionnaires that help assess risk to determine the appropriate valuation approach, such as capitalization rate to value business goodwill and total business value; discounted cash flow; market benchmarks using a range of average median values; and analysis of discretionary earning etc. for the valuation. Other products include models to assist in the calculation of affordability for the purchaser and determine if a business investment makes financial sense.

Firms often use these products to highlight to clients the need to improve business performance. This can support a successful exit value being achieved to fund the owner's retirement and at the same time identify potential succession planning roadblocks, identify strategies to improve growth and productivity, and examine alternative strategies such as mergers and acquisitions.

When considering business-valuation software, ask:

- Are the tax calculations in the software appropriate to the jurisdictions?

- Are the questionnaires or other industry-specific issues addressed by your clients' software?

- Will your clients understand the reports?

5.5.20 Tax Planning

This kind of software is used to assist clients to understand the financial effects of tax-planning measures, timelines, amounts of future tax payments based on various scenarios, and tax consequences of legislation changes. Often they are similar to scenario-planning tools. They allow various models to be created to help clients understand the taxation consequences of business decisions. The products can be invaluable in assisting clients to ensure that monies are set aside for tax liabilities by the due dates.

When considering tax-planning software, ask:

- Does it provide frequent and accurate updates to ensure legislative change is incorporated on a timely basis?

- Is the quality and clarity of reporting high enough?

5.5.21 Wealth Management Tools

Many firms provide wealth management/financial planning services, including risk products (such as income protection and life insurance) and finance. Generally these services are highly regulated. Most often products are tailored for a specific jurisdiction to ensure compliance with the regulations and include:

- Products to gather information and generate financial plans and model scenarios;

- Products to monitor client investment portfolios; and

- Platforms, generally online, to assist firms in accessing finance and other financial services products.

As the highly regulated nature of the wealth management industry means that the products could be substantially different in each jurisdiction, the fundamental issue for any firm looking to acquire these products is jurisdictional compliance. Other factors include the quality and clarity of reports produced.

5.5.22 Data Analytics Tools

With the help of sophisticated algorithms, firms are finding ways of using this data to better meet the needs of existing and future clients and add value.

With the advent of cloud accounting and cloud computing in general, new technologies now exist to unlock this information by analyzing it quickly and automatically, allowing all parties to act on it immediately.

Data analytics is something SMPs have been doing for centuries—examining financial and non-financial data from various sources with the purpose of identifying trends and opportunities. This data is used to allow businesses to make good business decisions based on verifiable facts or projections.

As more data is created every year, there has been a rapid growth in data analytical tools to allow firms to model and analyze data in different ways and from different databases.

The concept of "big data" is currently the buzzword which is often interchanged with data analytics. Big data is a term that describes the large volume of data which is both structured and unstructured that inundates a business on a day-to-day basis. What is important is how organizations choose to use and verify available data.

Predictive intelligence is now emerging as one of the most powerful tools available for a broad range of businesses including SMPs. For today's modern firm, predictive intelligence is actually closer than ever and has the ability to transform the firm and the financial future for its clients. Harnessing and aggregating the data at hand is the key to unlocking valuable information and delivering actionable business insights. What is needed is the toolkit to tap into this information and produce business intelligence that can be used to influence future outcomes.

Predictive intelligence is a mix of automated analytics that produces results in real time for cloud-based subscribers. Once the domain of the world's largest data-trawling companies, the automation of the cloud and a handy software toolkit can now match a range of externally held data to internally held data—such as the extensive information kept within tax returns—and predict a possible outcome.

Toolkits based on predictive intelligence, now being made available to the accounting industry, will help unlock the intelligence in such valuable data. They will pave the way for accounting firms of all sizes to deliver the same high-quality advisory outcomes.

Predictive intelligence is based on big data algorithms that search legislation, rulings, the precedents created by legal proceedings, commentary, and practice aids. By applying filters across results by content type, library, topic, jurisdiction or court, it can match possible changes to any field held in a tax return with client data entered. Predictive intelligence big data can also search news items and cross-match them to legislation outcomes. Toolkits can even assess the impact on other financial transactions, property valuations, or portfolio-management software.

This is no time for inertia—the accounting industry's journey to more cloud-based, bespoke solutions should continue so that it can lead the way in providing the information clients need to make more informed business decisions. SMPs need to remain focused on how to best support and add value to their existing clients and keep embracing innovation.

No matter the size of your firm, a range of data analytical tools are available. Microsoft Excel continues to be the world's most commonly used application for data analysis and was designed for this purpose. Using its statistical tools and vast collection of functions, it provides an entry-level product to extract useful and valuable data. The product can be used to build forecasting models, understand relationships between variables, and support dashboard reporting. There are also now new products available targeted specifically to SMPs.

5.5.23   Communications

Firms are increasingly seeking ways to connect with their clients and their team as the world goes online. Technology is providing new ways to service clients and greater flexibility in work arrangements.

Increasingly, team members are working from home, from clients' offices, and even from different cities and countries. The success of a firm today is more dependent than ever before on the judicious deployment of communications technologies.

Cloud solutions are making it easy to share information and data within firms and with clients in real time.

5.5.24   Firm Websites

Many firms now have a website. Most provide an overview of the firm's services and people and give some information for potential recruits.

To date, few firms have used their websites to assist in service delivery. However, some have incorporated secure client portals where electronic copies of client documents are stored. Clients can access copies of their financial statements, taxation, and other documents whenever they are required. Some document management providers also provide this portal functionality, which can then be linked to your firm's website. Other firms have created opportunities for clients to pay their fees online or book appointments. As accounting software moves online, firms are starting to provide branded accounting and other applications for clients to use.

Some have engaged web developers to custom build a website. These websites can be difficult to maintain and update and your firm is locked in to the web developer for ongoing maintenance and support.

More simple out-of-the-box software or host solutions are now available, including templated solutions for accounting firms. These often incorporate sought-after functionality at a competitive price while still allowing firms to promote their unique value proposition through a personalized "look and feel." Some providers engage web designers to ensure that each firm's website has a significantly different look, even though the functionality is the same. For example, many provide client portal functionality, appointment-booking systems, and recruitment functionality.

Your firm needs to be able to update content without the involvement of the website developer. Many websites incorporate a content management system (CMS), which can publish standard word-processed documents without the user needing to know coding. This means that a non-IT professional can maintain much of the website.

For most firms, your website's prominence in search engine results can be a useful marketing aid. Search engine optimization (SEO) in theory can bring a website to the top of search results when specific words or phrases are searched; however, it can be expensive and not enduring, since search engine companies change their search algorithms regularly. Search engine marketing (SEM) enables the purchase of keywords that bring a website into prominence (via a sponsored link) when those keywords or phrases are used. A charge is incurred if a user clicks on the link that takes them to the sponsor's website. The amount incurred for SEM activities can be easily controlled and SEM providers supply detailed analytics to assist website owners understand the keywords that achieve the best results.

Your firm would be wise to regularly explore the websites of other accountants to review the functionality provided.

5.5.25   Intranet/Knowledge Management Systems

If your firm is large enough, has multiple offices, or a virtual team, you may want to consider the benefits of an intranet. While new practice-management software systems may provide similar features, firm intranets continue to have a role in facilitating knowledge sharing and collaboration.

A firm's intranet, equivalent to an Internet site just for your staff, can facilitate internal communication and knowledge sharing. Generally, the intranet will contain news, links to commonly used applications and

websites, and an internal contacts directory. Most also contain reference libraries where technical and other reference papers can be uploaded/downloaded; however, many firms struggle to maintain them. A dedicated team member needs to be appointed to ensure the library is maintained.

Include an online version of the firm's manual, containing checklists, standard letters, standard work papers, and other precedent documents to ensure quality is maintained and to enable efficient production. Many firms also list standard procedures. These document the steps to follow to complete a particular assignment. This reduces training and assists in ensuring that all team members are following the procedures that your firm has designed to maintain quality and efficiency. Many suppliers of firm intranet technology also provide standard precedents. Many professional bodies also provide a series of precedents for use by their members.

You may wish to integrate the intranet with your firm's practice management system. This enables standard letters and other documents to be automatically populated with client names, addresses, and other details. This reduces errors and increases efficiency.

A key aspect of the firm's intranet is to capture the intellectual property in the minds of team members (knowledge management). This may include a precedent on a key advisory topic, a checklist to ensure that work is complete and accurate, and research material. Other forms of knowledge relating to client interactions are often maintained in practice management systems.

In many firms, knowledge management systems fail. Underlying technology is only a small part of any successful knowledge management system. The most important element is firm culture and training to ensure that everyone in the organization is committed to ensuring that key data are captured. Team members need to be encouraged to:

- Capture details of client interactions;

- Record information about a client that may assist others who may have a need to service the client in the future;

- Capture past reports, advice, and other information that may assist others who may carry out similar assignments in the future;

- Make suggestions to improve existing precedents and checklists; and

- Store (with relevant keywords) research material, newspaper articles, and other information that may assist others in the future.

The intranet/knowledge-management technology needs to incorporate functionality that enables rapid access to the desired information by keywords or full text searching (much in the same way an Internet search engine does). Many document management systems incorporate firm intranet functionality.

5.5.26 Document Management, Workflow, and Scanning

In recent years many firms have moved to improve efficiency in document creation, storage, and retrieval and to reduce the space and cost associated with paper storage. Document management solutions may be integrated with a firm's management systems.

Document management

This is the electronic storage of your firm's letters, work papers, and other documents. The mere storage of documents does not provide the breakthrough in productivity that a full document management system can achieve. Many suppliers only provide a document storage facility with limited document management functionality.

Document management functionality includes:

- Ability to filter and sort the document store based on sophisticated criteria: Many systems enable firms to store user-definable data (metadata) on documents that can then be used for document retrieval. Examples include work types, years, type of document, and reviewer or approver. This enables users to quickly locate documents or groups of documents.

- Access control: This controls who is able to create, edit, view, delete, review, or approve a document. It ensures the integrity of the document store is maintained. For accounting firms, it is critical to maintain the review and approval process. Approved documents need to be locked so that they cannot be changed without the approver's (or authorized administrator's) action. Only with effective access control can firms consider abandoning paper and place reliance on their document management system.

- Check in/out functionality: This ensures that two people cannot edit the same document at the same time and is important in ensuring that one individual does not overwrite the work of another.

- Version controls and audit history: This keeps each version of a document as edited and can track when and by whom changes were made. This enables reversion to older versions of the document if necessary or an ability to review the changes made from one version to another. This is implemented in most law firms; however, most accounting firms do not see the value in maintaining multiple versions of the same document.

- Full text and keyword searching: A full text index enables the system to index every word in every document for most document types. The system automatically maintains the index as documents change. Once indexed, users are able to search for documents in the same way that an Internet search engine is used. Access is instantaneous. It should not be compared with the search functionality in Windows Explorer, which does not have an index and is therefore slow, as it has to read each document in turn. Note: Google Desktop has document indexing capability.

- Multi-office synchronization: Some systems provide the capability to synchronize data between offices. This enables each office to work independently using a local copy of the database to ensure access speed is maintained. Periodically the versions of the database at each location are synchronized so that a firm-wide document store is maintained.

Access speed is a critical component of any document management system. Team members will quickly become frustrated if documents take too long to find or load. For this reason, care should be taken if an online document-management solution is being considered, since this will depend on the speed and reliability of communications links. Therefore, in many jurisdictions, online document management systems are not viable.

Some document-management systems assist in the entire document creation process. They incorporate document creation functionality, which launches the editing application (such as Microsoft Word); provide rapid document profiling (creation of user-definable metadata); and on completion, automatically store the document in the system. In other systems, the document is created outside the system and is imported into the document store on completion. Systems that assist in the document creation process are generally more efficient.

Document management systems often utilize Microsoft SQL database technology to enable rapid searching, sorting, and access to documents and to ensure that performance is not significantly impaired as the system grows. Even for smaller firms, the document management store can quickly grow to a large size. This is less important as disk storage and backup technology continue to rapidly grow.

Many systems incorporate functionality that enables emails to be directly stored into the document management system from the email system.

Document-management systems often drive significant change in firm operations. To be effective, everyone in your firm must use the system. This requires changes to personal work practices, which often can be difficult to achieve. Significant time and effort should be put into implementation.

You need to ensure that team members have the technology platform that optimizes their use of the system. The first requirement is to ensure rapid access to documents even when the system is under heavy load. The second is to implement multiscreen technology to enable review and edit of multiple documents at the same time.

PDF creation

Adobe PDF has become the *de facto* standard for transmitting documents between organizations. While not totally secure, PDF documents are more difficult to change for the average computer user. Accordingly, most firms will create PDF versions of financial statements and other documents for storage in their document management systems and for electronic transmission to clients.

PDF documents provide greater levels of security than a traditional document. Security features include encryptions, digital ID and signatures for sender authentication, approval, printing, editing, and copying restrictions.

Some PDF creation software products also incorporate PDF collators, which enable multiple PDF documents to be incorporated into a single PDF file, with the user being able to manipulate the order of the documents. This means that when multiple documents are sent to clients in PDF form, they can be incorporated into a single file in the order that your firm would like the client to review them.

Other PDF creation software facilitates the inclusion of "sign here" stickers, addition marks, or ticks to highlight a document has been reviewed, as well as watermarks.

Storage of documents into the document-management system directly from the PDF creation software enables efficient storage of PDF documents.

Document workflow

Document workflow is progressively being incorporated into most document-management systems. Document workflow is the integration of tasks and queries with documents. Many firms use *ad hoc* systems that record tasks and "to do" lists.

A system that incorporates document workflow goes one step further, connecting tasks and documents. So a task or query can be attached to a document and delegated to a team member. Team members can request the system to show only those documents that have open tasks that have been delegated to them. The tasks/queries list is highlighted and connected to each document it relates to. This greatly increases the efficiency of accessing information to complete tasks or queries.

Examples include requesting a document to be reviewed, asking a question about how to complete a document, or requesting a task to be completed for a document. Without document management systems, team members revert to sending emails, often with a copy of the document attached. This not only can create confusion with multiple versions of documents, but also means that it is not possible to review the status of the particular task or query. Think of it as the paperless office's version of a Post-it Note on a paper document.

Scanning

In most firms a significant volume of paper is still received from clients, regulators, and other parties. If a document-management system has been implemented, scanning enables efficient electronic storage of these paper documents.

In some firms, hard copy work paper files are still preferred, as it is considered that file review can be more efficient with paper (however, see comments above regarding multiscreen workstations in the document-management section). In these firms often the work paper file is scanned at job completion and the paper file destroyed.

Scanning solutions require hardware and application software. Often the hardware supplier provides them but the software applications are quite generic. Scanning applications that are designed for the accounting profession are available and should work with most scanning hardware as almost all such applications use common interfaces.

Scanning should be high speed, facilitate double-sided scanning, and be integrated into the document-management system to facilitate rapid storage with appropriate user-defined metadata. Some scanning systems have functionality to remove marks on documents and to rotate documents to ensure all documents are the right way up.

Some scanning solutions incorporate optical character recognition (OCR) functionality, which reads the text on the document after it is scanned. Often these systems can interpret the document and intelligently store it, often utilizing the data to automate other processes. For example, some can interpret source documents for tax preparation systems and populate the items on the tax preparation system automatically. Others can scan source documents from regulators and automatically generate letters to clients outlining the action to be taken. A potential downside to OCR functionality can be the speed. As the OCR application needs to read the text from a scanned document, it can be quite slow. Firms should ensure that "real world" examples of the application are shown in any demonstration.

5.5.27   *Integrated Suites and Bolt-On Apps*

Often, one or more suppliers provide an integrated suite incorporating many of a firm's applications. These suites will include firm management, accounts production, tax preparation, company statutory records, intranet, and document management functionality. The benefit of the integrated suite is the sharing of data between applications. For instance, a change of address in firm management needs to be incorporated into a tax return as well as the statutory records for the company. In an integrated suite the change is made once, and all applications automatically update. The software is also generally aware of any processes to generate documents needed by these applications resulting from the change.

Integrated suites also facilitate firm-wide reporting so that data from multiple applications can be incorporated on a single report. For example, useful insights may occur from including firm management and tax preparation data in the same report.

Most integrated suites use Microsoft SQL database technology, which enables easy integration and reporting across the applications.

Stand-alone software is often developed to focus on a single aspect of business operations and can deliver a highly tailored solution, but because of the single focus on a specialist field the software systems often don't integrate easily with other systems. As a result, to allow data to connect or be shared with other systems, it requires data exports or the use of other programs to transfer or manipulate data. This means there is the potential of increased cost and time frames, and the possibility of human error.

For small firms integrated software packages are affordable and help to mitigate risks and encourage data sharing from core systems. While some packages have a limited number of features compared to individual single-application packages the move to cloud solutions is enabling niche developers to offer bolt-on apps that can provide access to additional tools and functionality on demand.

5.6 Leveraging Technology for Practice Innovation

5.6.1 The Role of Technology in the Modern Accounting Firm

Technology will play a significant role in all modern accounting firms. To achieve this you must consider the following:

- Develop a strategic plan and budget for your firm's technologies.

- Implementation and training are the key to successful use of technologies.

- Ensure that a system selection process is followed and not overly influenced by suppliers.

- The Internet is transforming how firms today are interacting with clients.

- Firm websites are critical components in servicing clients and in positioning the firm for recruitment.

- Firms must ensure adequate technical support for efficient and reliable systems.

- Stick to mainstream hardware and applications that are in wide use so the firm can have confidence that the applications and systems will deliver desired outcomes.

- Practice management, accounts production (and audit), and tax software together with word-processing and spreadsheet software are the key production platforms that underpin the efficiency of most firms. Hardware platforms should be implemented that efficiently and reliably support these applications.

- Document-management and knowledge-management applications have the potential to deliver significant improvements in client service and efficiency in the future.

- Hosted solutions/cloud-computing solutions are emerging that have the potential to enable SMPs to operate with lower infrastructure investment and system management costs.

- Adequate attention and resources should be dedicated to risk management to prevent catastrophic failures.

Technology, when used strategically, is a mechanism to improve efficiency.

The implementation of new and emerging technologies can completely transform a firm and having a technology and e-business strategy is important for real change to occur.

Technology is an example of an emerging risk which firms need to acknowledge as our society and business environment continues to face rapid change.

Technology is a key component of success in any firm in today's world. It is critical that accountants stay up to date on the solutions available and the benefits these technologies can deliver. It is equally important to dedicate sufficient resources to ensure that any solutions that are deployed are properly implemented and maintained.

To succeed, firms must ensure that people fully understand and capitalize on the functionality of the software. All staff will need to be well trained to ensure the promised productivity gains from any solution are achieved.

5.6.2 Mobile Working

Another form of remote working is the mobile team member. Equipped with a laptop or netbook, these remote workers can work from any location—home or clients' offices. Working from clients' offices has the potential to increase efficiency as it can facilitate faster resolution of queries.

Some firms with large numbers of clients in remote areas schedule "tours" where team members visit a region and, with the appropriate technology, meet clients and complete all or most of the work while on-site.

5.6.3   The Virtual Office

Possibly the greatest transformation brought about by the Internet is the elimination of barriers caused by geographic separation. In particular, technologies like VoIP enables remote accountants working at clients' offices to stay connected to the firm, accessing resources and exchanging information with other staff from remote locations. The technology also enables more opportunities for staff to work from home ("remote working").

Many firms have created "thin client" environments which enable all staff to access your firm's systems and work as though they are located in the office, regardless of actual location. Document management systems are critical to enable access for all client files.

The past 20 years have seen significant changes with many staff seeking opportunities to work flexible hours or work from home.

Some firms remain reluctant to permit significant remote working. There are concerns about supervising a team member to ensure productivity is maintained. Working from home requires personal discipline, a quiet work area free of disruption, and all the enabling technology. Some firms have found this works for some staff but not for others.

5.7   Technology Risks

Technology risks continue to evolve. A firm should establish and maintain a technology risk management framework. This framework should include policies and procedures that document how a firm assesses and identifies risks associated with the use, ownership, operation, and adoption of IT.

5.7.1   Disaster Recovery and Business Continuity Plans

Failure to have an effective business continuity and disaster recovery system can be catastrophic. Fires, equipment failure, data theft by disgruntled team members and hackers can create serious rectification costs and/or loss of productivity.

Your firm needs an effective risk management plan. While for a SMP it may not need to be a long and complex document, it should cater to the following systems issues.

Backup systems

Firms need to ensure systems are effectively backed up, so that the systems and data can be recovered in the event of a system failure. There are different types of backup:

- Bare-metal backups: these back up everything possible on the server including device drivers and other low-level configurations so that a server can be restored exactly as it was configured.

- Full-system backups: these back up all server operating systems, application software, and all data but often may not back up key server configuration information.

- Data backups: these only back up data, not operating systems and application data.

If only data backups are maintained, the time, cost, and effort to restore systems significantly increases. As full-system backups are significantly larger than data-only backups, some firms perform data backups daily and full-system backups weekly or monthly. Should any significant change occur to the configuration of the server or applications, a fresh bare-metal or full-system backup should occur.

Some backup systems perform incremental backups. This backs up only data that has been changed since the last backup. This can mean that to perform a full-system restore, multiple backups will be required. The backup software maintains a database of the backups so that it can locate specific files.

The advantages of disk or cloud backup procedures rather than backing up to tape include:

- Backing up to the cloud eliminates the cost associated with multi-site tape storage and tape transportation. Cloud-based backup includes multi-site data redundancy.

- Unlike disk drives, tapes can deteriorate without proper care thus resulting in the unexpected loss of data.

- Data/system restoration via disk or cloud is significantly quicker than via tape.

Rotation and off-site storage

An important consideration is the rotation of the backup media or, if the backup is online, the management of when backups are overwritten or deleted.

Generally firms maintain a separate backup for each day of the week. This allows a file or system to be restored for any day (in case a file is deleted). Most firms then hold the last daily backup for the week for 4 weeks. Some then hold the fourth weekly backup as a monthly backup, which in turn is held for 12 months. Finally, some firms hold a yearly backup forever.

In this way it should be possible to restore a file that was deleted a day ago, a week ago, a month ago, a year ago, or any point in-between.

It should be noted that this rotation will require 5 daily, 4 weekly, 12 monthly, and 1 yearly backup (a total of 22 copies). For this reason tape systems continue to be the cheaper alternative.

Clearly backups should be maintained off-site in case of fire or other disasters. They should be maintained at a secure location that can be quickly accessed if a disaster occurs. Backups should not be held in team member homes due to the risk of loss or destruction should the team member become disgruntled.

Backup software

A backup is only as good as the backup software. It is the software that ensures the right files are backed up and can be restored. For SMPs with limited IT knowledge, only well-known brand backup software should be considered. As a general rule, use the software recommended by your firm's external IT technical support company, since that company will be responsible for its maintenance and support.

Reviewing logs

Most backup software systems maintain logs to record the success or failure of the backup. Some backup systems cannot back up some file types while the file is in use. Accordingly, it is important that the backup logs are reviewed daily to assess whether any failures have occurred. Backup alerts should be configured to automatically notify the IT administrators when backup failures occur. This secondary measure ensures that key IT personnel are alerted and continuous backup failures are not overlooked.

Trial restores

The most effective test of a backup is to attempt to restore a file. Procedures should be adopted that at the very least, a monthly trial to restore occurs to ensure, as far as possible, backups are working effectively.

5.7.2   Cybersecurity

In today's computerized world, new risks emerge every hour of every day. Connecting to the Internet opens up the possibility of a hacker targeting your firm. Cybercrime is becoming big business and cyber risk a

focus of governments globally. Risks are high in monetary and reputational terms if you don't have an appropriate cybersecurity plan.

Cybersecurity is making sure your business data is safe from attack via the Internet. It can encompass a body of technologies, processes, structures, and practices used to protect networks, computers, programs, and data from unauthorized access or damage. The goal of any cybersecurity strategy is to ensure confidentiality, data integrity, and availability.

There are several primary means by which cybersecurity issues can affect (or even destroy) your firm and reputation.

There is the risk that a hacker might obtain sensitive information such as bank account, credit card, or tax file data. There are open markets for such information on the "dark web" —the more seamy alleyways of the Internet. If others access such sensitive information, your business might find its banking or credit card facilities withdrawn or in breach of privacy laws. Each month high-profile security breaches impacting individual data are reported globally.

A second but related issue is that when a hacker obtains sensitive information about the business, the business may find its reputation ruined. Few small firms or their clients can survive the damage to its reputation that such lost data might cause. The damage to business reputation and goodwill might be more crippling than the actual data loss itself.

Loss of client data may result in court action against the business. A third party might sue your firm as they have themselves incurred a loss. Firms might also be subject to significant penalties and/or court action arising from breaches of the privacy laws in many jurisdictions.

The most recent and alarming aspect of cybersecurity that causes considerable problems for firms is ransomware. From about 2012, ransomware attacks have adopted commercially focused business models. That is, the virus has commercialized. Here, a virus arrives via a Trojan horse—a phishing email disguised as a funny video or perhaps a fine—and secretly installs the virus. This virus slowly encrypts your data with a secret 2,048-bit encryption key. For a time, your data continues to be accessible as the virus decrypts the data using the key. However, once all data is encrypted including in most instances your backup systems, you will be contacted and asked to pay a ransom within three days, or the criminal gang will remove the encryption key and your data will be lost. Literally, the criminal gang holds your data to ransom— hence, ransomware. The key is sufficiently strong that cracking the key instead of paying the ransom is uneconomic—some estimate that an average desktop computer would take five quadrillion years to decrypt the data without the key. It is unlikely you have that kind of time.

New threats continue to emerge and your firm needs to be sure it is equipped to deal with them.

Protection from malicious software and external attack

Most important among the critical system utilities is software to protect you from malicious attacks.

- Firewalls are software (and also hardware) designed to protect your system from attack from people accessing the firm's systems via its external communication links.

- Virus protection protects your system from attack by software code that can do anything from displaying annoying messages to erasing files and disks.

- Malware/spyware protection protects your system from software code that may annoyingly pop-up windows or have more insidious intent, such as logging usernames and passwords for fraudulent purposes.

- Anti-spam software protects email inboxes from being clogged by unwanted broadcasted email.

- Anti-phishing software protects users visiting websites that are designed to trap user information that can then be used for fraudulent purposes.

All are mandatory for any well-managed system. The cost of an attack can be significant, involving loss of data, fraud, and the significant cost of rebuilding systems.

Always use a well-known, reputable supplier. Some companies purport to supply these utilities but in fact the utilities themselves can be malicious software. Be cautious about using free software or software from an unknown vendor. Generally, it is best to use the utilities recommended by your systems integration (technical support) organization, as they will be responsible for its installation, configuration, and maintenance.

Maintenance of these applications is critical. New malicious software emerges every day. Most software vendors provide at least daily automatic update to their databases to ensure that the system continues to be effectively protected. Ensuring that these updates are correctly implemented is essential.

5.7.3 Hardware Maintenance Plans

Maintenance contracts should be maintained with hardware suppliers so that hardware failures can be quickly rectified. These contracts should specify the service levels that the supplier will meet in the event of failure. Critical hardware such as servers, switches, and backup technologies require prompt attention. Many contracts specify four-hour response for failure of these components. Other, less critical hardware such as individual workstations can have longer response times.

Some firms, particularly in remote areas, purchase some critical components that have a higher potential to fail, such as disk drives or power supplies, as spare parts that can quickly replace a failed component. For firms that rely on maintenance contracts, your firm should ensure that the support organization maintains an adequate supply of spare parts.

The quality of your firm's external IT support organization is critical in ensuring your systems are correctly implemented and supported. Issues that need to be considered in selecting an appropriate organization include:

- Their knowledge and experience with your firm's hardware and operating system configuration;

- Their knowledge and experience with your firm's application software;

- Certifications held with major hardware and software companies, which provides an assurance as to the competency of the people in the organization;

- The number of people within the organization who have the required knowledge to support the system—this is critical as a reliance on a single individual can result in significant delays and cost should that individual be unavailable for any reason; and

- Their ability to provide support services remotely to enable rapid response to issues at a reasonable cost.

5.7.4 People and Documentation

Your firm should establish a plan to mitigate the risk of key people being unavailable in the event of a system failure. Keep a list of contact details for backup technicians. Document the configuration of hardware and software applications and keep this up to date so that a new technician can quickly rebuild the system.

5.7.5 Policies and Procedures

Good IT governance procedures within a firm are critical. Implement policies to ensure that systems are not misused, and ensure that applicable policies are continually reviewed and updated to reflect current risk.

Ongoing education to all firm employees on technology risks should form part of a firm's risk management framework, with potential security breaches being avoided as a result of education and policies being promulgated to all levels of staff throughout a firm.

Policies should include:

- User Account Management: rules and policies for all levels of users; procedures to ensure the timely discovery of security incidents; IT systems and confidential data are protected from unauthorized users.

- Data Management: establishment of effective procedures to manage the repositories, backup and recovery of data, and proper disposal of media. Effective data management helps ensure the quality, timeliness, and availability of business data.

- IT Security Management: process that maintains the integrity of information and protection of IT assets. This process includes establishing and maintaining IT security roles and responsibilities, polices, standards, and procedures.

Individual jurisdictions are likely to have enacted legislation that may require particular policies, or issues within a particular policy, to be addressed. The local professional body may be able to assist. Common policies are listed below.

System use policy

This policy generally outlines the rules by which your firm's IT systems can be used. Issues to be considered in this policy include:

- Mandatory use of passwords on all systems, such as phones and tablets, including the need for passwords to be changed regularly and a prohibition of providing passwords to other team members or third parties;

- Prohibition of copying firm data and removing firm data from the office without approval;

- The encryption of memory/USB sticks;

- The physical security of equipment;

- Use of the system during business hours for only your firm's business; and

- Rules for the private use of the system, if allowed, outside office hours.

Email use policy

Issues to be considered in this policy include:

- Prohibiting the use of personal email accounts for business matters;

- Responsibility to check email regularly;

- Responsibility to organize and file email;

- Use of professional standards and courtesy in messages;

- Prohibiting email use for unlawful purposes (copyright infringement, obscenity, slander, fraud, computer tampering, etc.);

- Prohibiting email use outside your firm's policies;

- Prohibiting sending large attachments;

- Prohibiting opening email attachments from unknown sources (as they may contain malicious software);

- Prohibiting accessing email accounts of other individuals;

- Prohibiting sharing email account passwords;

- Prohibiting excessive personal use of your firm's email;

- Notification that the firm will monitor email; and

- Reporting of misuse.

Internet use policy

The issues to be considered in this policy include:

- Limiting Internet use to business purposes;

- Notification of the ability of your firm to track Internet usage;

- Prohibiting access to sites that are offensive to a person's gender, sexuality, religion, nationality, or politics;

- Other prohibited sites (some firms prohibit sites that can affect productivity);

- Ensuring that downloads occur only from a safe and reputable website;

- Prohibiting downloading executable (program) files as they may contain malicious software, and also prohibiting downloading pirated music, movies, or software;

- Prohibiting providing the user's business email address in order to limit the likelihood of spam; and

- Consequences of violation.

Remote access policy

Issues to be considered in this policy include:

- Approvals required for external access;

- Reimbursement of external access costs;

- Security procedures (including disclosure of passwords, third-party use of system, disconnection from other networks while accessing your firm's systems, and use of firewalls and installation of appropriate software to protect the remote system from malicious attack);

- Physical security of firm-supplied equipment such as laptops;

- Reporting of any possible breach of security, unauthorized access, or disclosure of your firm's data;

- Agreement that your firm can monitor the activities of the external user to identify unusual patterns of usage or other activities that may appear suspicious; and

- Consequences of noncompliance.

5.7.6   Insurance

Adequate insurance should cover the cost of replacing infrastructure as well as the labor costs to rebuild systems and restore data. Consider also insurance for the loss of productivity resulting from a major system failure or catastrophic event.

5.8   Conclusion

The IFAC Global SMP Survey continues to rank keeping up with new technology as a major challenge for SMPs and their clients.

From the Internet to knowledge management and the automation of financial data handling, technology continues to be a key driver of change. Firms need to embrace technology as an opportunity rather than a challenge and acknowledge they have no control over the rapid pace of change.

Technology will increasingly become a component of a modern accounting firm and in the future it will be highly likely that for SMPs mainstream hardware and applications will be replaced by Internet-based solutions. Key areas for focus are:

- Develop a strategic plan and budget for your practice technologies.

- Implementation and training are the key to successful use of technologies.

- Ensure a system selection process is followed rather than being overly influenced by suppliers.

- The Internet is transforming how firms today are interacting with clients.

- Firm websites are critical components in servicing clients and in positioning the firm for recruitment.

- Firms must ensure that they have adequate technical support to ensure that systems are efficient and reliable or adopt new service models.

- Stick to mainstream hardware and applications that are in wide use so the firm can have confidence that the applications and systems will deliver desired outcomes.

- Practice management, accounts production (and audit), and tax software are the key production platforms, together with word-processing and spreadsheet software, that underpin the efficiency of most practices. Hardware platforms should be implemented that efficiently and reliably support these applications.

- Document-management and knowledge-management applications have the potential to deliver significant improvements in client service and efficiency in the future.

- Hosted solutions/cloud-computing solutions are emerging that have the potential to enable SMPs to operate with lower infrastructure investment and system management costs.

- Adequate attention and resources should be dedicated to risk management to ensure catastrophic failures do not occur.

Technology is a key component of success in any practice in today's world. It is critical that practitioners ensure that they keep up to date to fully understand the solutions available and the benefits these technologies can deliver. It is equally important that sufficient resources are dedicated to ensure that any solutions that are deployed are properly implemented and maintained. To succeed, firms must spend time to ensure that people fully understand and capitalize on the functionality of the software and that all team members are well trained to ensure the promised productivity gains from any solution are achieved.

5.9   Further Reading and IFAC Resources

The IFAC Global Knowledge Gateway is a digital hub where professional accountants can easily access thought leadership and resources from IFAC, member organizations, and other notable groups and individuals.

The Gateway Practice Management section includes additional articles, videos, and resources to complement this module. We encourage you to review the content, provide feedback, engage with contributors, and share your own insights on contemporary practice issues.

Appendix 5.1 Website/Intranet/Extranet Software Evaluation

Product: _____ **Evaluation Date:** _____

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Website			
Website templates provided			
Client newsletter facility			
Client/prospect registration facility			
Client surveys			
Optional news and business content automatically provided to site			
Assistance in website design/logo, etc.			
Ease of website content creation (no need to learn HTML or other technical website creation skills)			
No limits to number of pages or subpages			
Secure shopping facility (shopping cart)			
Credit card payment facilities			
Broadcast email facility			
Client database integration to practice management			
Website hosting provided			
Supplied form templates (feedback forms, invitations, competitions)			
Email a friend functionality			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Search engine management (for the website to be found by popular search engines)			
User-defined forms can be included			
Job board (employment opportunities)			
Event registrations			
Intranet			
News area			
Web links			
User-defined favorites (links to websites, documents, or other data)			
History (recently accessed documents or pages)			
Provides views of firm management and other firm applications data			
Provides access to best firm precedents and procedures			
Staff directory/location tracker			
Firm knowledge base (technical and other papers)			
Outlook integration (email, calendar)			
Automated emails when news/knowledge base and other updates loaded			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Extranet			
Upload documents directly to extranet from other applications			
Add or remove documents from extranet based on date ranges			
Secure client login creating secure location for client interactions			
Secure client discussion forums			
Public client discussion forums			
Client product/service exchange (community of clients)			
Email notification to clients or firm when documents uploaded into client secure space			
Share documents with multiple clients from a single operation			
Client ability to update details (addresses, mobile, etc.)			
Client ability to review debtors ledger and pay fees			
Other			
Scanner integration			
Keyword indexing			
Full text indexing			
Support for all file types (sound, video, PDF, etc.)			
Integration with optical character recognition (OCR)			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Statistical reporting of website/ intranet/extranet usage			
Content management system (CMS) (approvals, removal dates)			
Access controls to individual aspects of website management system			
Search facility			
Spell checker			
Company			
Number of customers			
Smallest customer			
Largest customer			
Support provided			
Implementation services provided			
Training provided			
Client satisfaction survey results			
Reference sites			
Server requirements			
Workstation requirements			
Provider financial viability			
User groups			
Pricing			
Customer input into development			
Conversion from other products			

Appendix 5.2 Document Management/Workflow Evaluation

Product: _____   **Evaluation Date:** _____

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Document management			
Function			
Email storage			
Check-in, check-out			
Versioning			
Integration with MS Office and Outlook			
Clients/engagements integrated with firm management			
Integration with firm tax/accounts production, statutory records, pension plan, audit, and other compliance applications			
Launch applications from document management system			
Track history of edits			
Views of documents by outstanding queries, document preparer, document type, follow-up dates, etc.			
User-definable views of document lists			
Store documents by client			
Store documents by engagement			
Store documents by file type (correspondence, minutes, etc.)			
Drag and drop document to document management folder			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Permanent file support			
Document-retention processes for automatic archiving			
Integration to PDF creator software			
Document access control (reader, creator, editor)			
Client/engagement access control			
Attach user-definable attributes to documents			
View documents by user-definable attributes			
Review notes on documents			
General comments on documents			
Workflow			
Track queries on documents			
Assign documents to staff members			
Assign tasks to documents			
Track document delegators			
Create document due dates/follow-up dates			
Track status of document (in preparation, in review, approved)			
Lock documents once approved			
Use document links rather than copies of documents to email around the firm for review			
Track date the document was sent to the client			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Email document from within application			
Document threads (hierarchy), that is, parent/child documents			
Ability to link related documents			
Online approval of documents			
Automatic notification of outstanding issues			
Automatic escalation of outstanding issues			
Email management			
Store email direct from inbox			
Send email from application and store copy in application and outbox			
Keep firm-wide archive of all inbound and outbound email			
Approval tracking on emails			
Prevent staff from sending unapproved emails			
Ability to route emails to staff and allocate tasks			
Templates			
Create documents from standard templates			
Templates, client names, and addresses integrated with practice management system			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Suite of template documents supplied			
Standard letter templates			
Checklist templates			
Work paper templates			
Template updates supplied			
Template versions maintained			
Template usage tracked			
User templates can be added			
User amendments to standard templates not overwritten on update			
Facility to distribute user templates to multiple offices			
Best firm procedures provided, linked to best practices documents			
Individual users can have their own suite of documents			
Facility to track reviews and authorization of standard documents			
Other			
Internet access to application			
Access to documents from other applications			
Documents replication/ synchronization (disconnected access to documents)			
Scanner integration			

	Importance to Firm 0 = Not Required 1 = Low Requirement 5 = High Requirement	Rating 0 = Function does not Exist 1 = Exists, but Poor Implementation 5 = Exists and Excellent Implementation	Comments
Keyword indexing (searching)			
Full text indexing (searching)			
Smart filters to enable viewing of only required data			
Integration with secure client extranet			
Support for electronic signatures on documents			
Integration with optical character recognition (OCR)			
Company			
Number of customers			
Smallest customer			
Largest customer			
Support provided			
Implementation services provided			
Training provided			
Client satisfaction survey results			
Reference sites			
Server requirements			
Workstation requirements			
Provider financial viability			
User groups			
Pricing			
Customer input into development			
Conversion from other products			

Appendix 5.3 Cloud Computing Evaluation Checklist

Product:_____   **Evaluation Date:**_____

Issues for Consideration	Rating of Importance	Rating of Supplier	Comments
Service provider due diligence			
• Is the infrastructure used by the cloud provider owned, outsourced, or contracted?			
• Where are the key service locations?			
• Has the provider obtained independent service and security accreditation and certification?			
• What type of business is using your service and are references available?			
• What data backup systems are in place and what would be the maximum lost days as a result of a major shut down?			
• What is the supplier's short-term and long-term product development plan?			
• Are there any compatibility issues with existing business systems or software systems?			
• What contingency and disaster recovery procedures are in place?			
Pricing			
• Are there upfront setup costs?			
• What is the pricing model (per license, data usage, or a combination)?			
• Ongoing fees (monthly or quarterly)?			
• Yearly fees (per license or data)?			
• What will be the cost of additional data transfer via my Internet provider?			
• Can the solution be quickly up- or downscaled at minimum cost?			

Issues for Consideration	Rating of Importance	Rating of Supplier	Comments
Accessibility			
• What is the guaranteed uptime and how is this calculated?			
• What compensation is available for downtime. How would this be calculated?			
• What are the minimum Internet requirements and what is the impact of Internet outages?			
• Is there a schedule of upgrades or scheduled service outages?			
Data storage			
• Where are the data servers located?			
• What encryption methods are used to secure the data?			
• How often are backups scheduled?			
• In what formats is the data stored? Are those formats easily convertible to the data storage format you use in-house?			
• What guarantee do they provide to maintain data security and leaks?			
• Who can access your data in the data center?			
• Is the service provider allowed to use data and/or metadata (i.e. Gmail and Google algorithms)?			
Support			
• Is emergency support available 24/7?			
• What kind of support channels are available (phone hotline/email/web-chat)?			
• How helpful is the customer help desk?			

Issues for Consideration	Rating of Importance	Rating of Supplier	Comments
• Do the help desk staff have an extensive knowledge base to answer day-to-day issues?			
• What self-service tools are available to manage logins, passwords, and general reporting?			
• Are documented customer governance policy documents available?			
• Do invoicing and payment systems allow online query management and service reporting?			
Termination clauses			
• Can you terminate the contract at any time without a significant penalty?			
• Can you terminate the contract without penalty if there is a security breach or other tenuous circumstances?			
• On what grounds can the provider terminate your contract?			
• How soon will the provider return your data after termination?			
• What is the cost of the return of data and are there options and pricing for escrow of object code, source code, and data?			