Dear Action Plan Team,

NICTA thanks the NSW Government for the opportunity to provide input into the development of the NSW Government Professional Services Industry Action Plan.

NICTA, as Australia’s largest Information Communications Technology research organisation, and headquartered in NSW, is deeply engaged with the development and application of ICT for the benefit of the Professional Services Industry and the people of NSW more broadly.

The Professional Services IAP Issues paper provides a wide-ranging discussion which provides good coverage of the challenges and opportunities facing the industry. We would like to underline areas of emphasis we think may contribute to the plan and provide commentary on technology and research where we think there are specific potential opportunities for NSW. Please note that the NICTA submission on the NSW Digital Economy Action Plan also provides relevant commentary for the Professional Services Industry, and for this reason we have attached NICTA’s response submitted November 24th, 2011.

We look forward to contributing to the development of the Plan over the next 12 months.

Overview

This submission is written from the viewpoint of how ICT and digital technology can support the NSW Professional Services industry and how Government might foster that support. There are several areas where we think Government initiatives could have significant impact:

- To encourage the rapid digitisation of our economy by removing the need for paper, physical presence, and improving trust and education around totally electronic transactions and service delivery.

- Given our strong Australian dollar there also needs to be an emphasis on moving to the provision of higher value services and, perhaps most importantly, making tools to automate service provision. These tools will not only improve the productivity of Australian workers, but also provide potential export opportunities in their own right.

- Improve education and awareness of the potential of new ICT technology.

- Use tele-presence and online collaborative tools to deliver services more efficiently, and also to allow easy scaling by drawing on remotely located professionals where needed.

- Provide regulatory support for enabling ICT trends like Cloud computing and telework.

- Have Government position itself as a leader in the use of digital technology to enable services.

NICTA’s research is relevant to this process in many areas, as outlined in this submission.
New ICT is key to enabling growth and globally competitive Professional Services

Professional Services is a people-intensive and process-oriented industry involving a great deal of interaction between the service provider and client.

As identified in the issues paper, a high Australian dollar creates pressure to outsource overseas, especially since salaries in countries like India and the Philippines can be an order of magnitude less than in Australia. Australia cannot compete on unit price, so we must compete on quality and locate ourselves higher in the value chain.

The latest ICT technology is providing better means to communicate and collaborate remotely, to handle information digitally and to codify process. These aspects of ICT provide two competitive advantages. First, high value services can be delivered remotely – for example project management in construction, or the high-level management of customer contact centres. Second, the technology can be used to build the tools which reduce the labour component – for example the work done in the lending industry in Australia (see discussion on LIXI at the end of this document) which reduced the time taken for loan approval from 14 days to 14 minutes.

Digitisation is a long term trend

Professional Services sectors have been part of a long term, global trend involving the digitisation of content, the electronic automation of work processes and the dis-intermediation of the traditional (professional) service provider and customer relationship. The sector has perhaps lagged in both the rate of change and the extent of adoption of ICT, but this means that there is further opportunity ahead.

Even if ICT is used just in assisting and enabling existing professional services firms with incremental advances there is still much which can and needs to be done: extending the speed, efficiency and responsiveness of services delivery, building efficiencies of scale and scope, increasing reach and access, and empowering employees.

In the next ten years we will see further digitisation of content, automation of processes, and increasing the speed, efficiency, scale and reach of professional services at corporate, sector and global levels. This digitisation is setting the scene for fundamental transformations in the underlying economics and behavioural fabric of professional service industries – much like the business models in the media sectors are changing structurally. Organisations like Google, Amazon and Facebook which are born digital will leverage Cloud, mobility, social and analytical capabilities to disrupt large chunks of increasingly redundant professional service business.

For example, new mobile payment products such as Google Wallet mean technology firms can compete directly with financial services providers and will change the way people use their money. The point of trust and relationship shifts to newer players.

Companies like Kaggle in analytics, 99Designs for logo design and Freelancer for software are early examples of this kind of disruption.

The next ten years

Professional services workers have an extensive period of content and skill-based training before entering the vocation and the largely face-to-face, situational specific delivery of the service. Yet, as the example from the lending industry shows (LIXI) services at the periphery of professional


NICTA Submission on the NSW Government Professional Services Industry Action Plan
services are being entirely digitally delivered, often well outside traditional suppliers - from law firms and conveyancing agents to information brokers.

This digitisation and automation trend is most likely inevitable, so we suggest the Action Plan considers what the Professional Services environment will look like at the end of its ten year horizon under this kind of scenario, and how NSW firms can be positioned to benefit in the ten years beyond that.

**Speed and Responsiveness**

Each professional services area - from legal to architectural, from engineering to logistical, has its own sector characteristics but universally there is a challenge to increase the speed of responding to client requests.

Using collaborative digital technology, a legal firm such as Mallesons (now part of the Chinese based King & Wood group) has been able to routinely draw upon lawyers with domain experience available in other locales (be it in another Australian state or country) to provide better service and this trend is only likely to accelerate.

Speed and responsiveness also improve when manual and multi-party processes become automated. In the early 1990’s gaining land title information in NSW was largely a manual process – which for a law firm meant hiring a conveyancing agent to physically visit the NSW Land Titles Office in Sydney, wait in line, do a manual search of Titles, take a certified copy and deliver this to the Law firm for the next step in the extended conveyancing process. Today, this Title Search a ten second $10 online exercise (rather than a full day $200 task) and other significant chunks of the conveyancing process are now being readied for electronic completeness – a reminder that redundant aspects of professional services are likely to become commoditised and automated over time.

Even in a sector such as transportation speeding up the flow of exports and import of physical goods, using sophisticated logistical modelling (a professional service) illustrates the multi-path and multi-level impact ICT within a professional services sector has across the speed and efficiency dimensions of an entire economy

**Reach and Remote Delivery**

Technologies such as high quality video-conferencing (tele-presence), Web 2.0 tools like Atlassian’s Confluence and cloud-based collaboration tools such as Google Docs can all be used to deliver services across Australia and the globe (or equally, import them). Pervasive broadband underpins this ability.

NSW-based professional services firms and professionals now have many ways to increase their reach and accessibility to extended geographic markets. For example, Hunter based engineering services firms in and around the extensive NSW mining sector, (such as Convatech, AJ Mayer and Advitech) could use ICT (and especially broadband) to deliver selected professional services to regional areas, other states and even overseas. The Australian Centre for Field Robotics has built a remote operations centre for Rio Tinto, enabling them to control operations in a mine in the Kimberly from the comfort of a capital city.

---


NICTA Submission on the NSW Government Professional Services Industry Action Plan
Increasingly cloud-based functionality will form an important value-add extension to many offerings. For example, mining site environmental data-log service provider Advitech, could extend their peer benchmarking and analytic capability via a hosted Cloud solution if data security concerns were allayed.

Just as the service provider benefits from extended market reach so do the many regional areas that were once relatively deprived of access to professional services. Pervasive broadband and reliable mobile connectivity creates many more service provider options for remote communities and resource sites than previously available. Increased competition raises the bar for local suppliers, with the highest quality to cost ratios winning over the longer term, be it in banking services, car manufacturing or car design.

Scale and Scope

The typical professional services business model has a high labour component, with access to the right type of quality professional staff often cited as a limiting factor to growth. In contrast, web-based business models have high levels of automatic processing and can scale service delivery largely independent of head-count but with skilled behind the scenes staff for design, programming, logistics and management. Each aspect of professional services is now undergoing rigorous scrutiny as a candidate for simplification, standardisation, repeatability and consolidation – with the intent of allowing the real professional content component to be the focus of where the human cost lies and using technology to help the business to scale.

Another aspect of scaling a services business is the ability to source specialist staff independent of geography as needed for large projects. Collaborative tools, broadband connectivity, and digitised processes and content make this practical.

The consumption of business services is also rapidly changing. The service/product mix today for professional services has an increasingly higher visualisation component. How information is mapped and conveyed, how it is made accessible to end-users, how it is made an experience, are now also more important factors. In many professional service sectors, such as in the professional education market, the increasing use of video, immersive content, measurement of sensory perceptions to gauge knowledge uptake (versus mere attendance) is increasing the richness of the services delivered.

Empowering People

Professionals need to be aware of the capabilities of technology and keep up to date. Appropriate training is important, as is exposure to the potential of emerging technologies. It is also important that staff have access to the appropriate ICT tools for the services industry they are in, and that we encourage the development of re-usable and exportable tools for professional services delivery. This is true for government staff as much as for the private sector.

NICTA’s has a number of initiatives which are designed to help NSW companies understand how technology can help them innovate. These are the e-Government Cluster⁴, the Future Logistics Living Laboratory⁵, (an example that has been successful in the Transport and Logistics space) and NICTA’s Digital Productivity Showcase (to be opened in early 2012). The important nature of these is that they create a neutral ground for collaboration and mutual understanding among

---

⁴ http://www.ehealthcluster.org.au/
end-users, technology vendors and the research community. They also raise awareness of emerging technology trends.

Industry clusters, especially with an ICT focus, can be a very useful mechanism to promote adoption rates of best practice technology, break down some of the barriers which exist between firms in the same sector and promote individual firm and industry level innovation.

A consistent business skills agenda item is for employees at almost every level to become more ICT aware. Management and staff within professional services firms need to address this as much as any non-professional sector. Dimensions of personal productivity, information and knowledge management, work-product refactoring, expertise search and collaboration all go to both top-line and bottom-line measures of a professional individual’s and firm’s performance.

All aspects are enabled by an affinity for, and knowledge of, how to use ICT effectively. With critical mass of ICT knowledge across a firm, there is a greater likelihood of conversations between ICT professionals and service professionals breaking down functional silos, leading to new ways of tackling processes, spurring innovation and addressing whole (service) product solutions due to depth, diversity and shared knowledge.

NSW professional services firms need to be encouraged to develop the ICT skills of their existing employees, reflect ICT skill capability in their future hiring criteria, and assist vocational, professional association and education facilities to understand that ICT skills within professional services are highly valued.

Roadblocks and Government Enablers

Paper must go - the issues paper includes a discussion on ways to improve productivity through leveraging ICT and cultural change. We would also add to this a specific focus on identifying paper-based and manual processes which can be digitised and automated. The need to sight physical signatures should be removed wherever practical. Government can take a lead here for instance by insisting on electronic transactions whenever possible especially when dealing with professional services companies.

Physical presence only when needed – people should only need to attend in person when there is no alternative. Electronic means should be developed to support this. Regulatory innovation can also assist. Recently, medical consultations over video were added to the Medical Benefits Scheme and given an item number. This will be a key enabler in the uptake of tele-medical services.

More Government services online – NSW already does this well, but there is more that can be done, especially in enabling access to government services on mobile devices. Properly executed, such government services can help private companies which rely on them as part of their business.

Access to pervasive broadband - the NBN is addressing this nationally, but state level support could help accelerate rollout, and through development of appropriate services and incentives promote uptake.

Access to Government data – to some extent this is being addressed, but governments have large amounts of data which could improve the competitiveness of NSW professional services firms. Traffic data, available on the web and actionable by machines, could lead to improved logistics and freight operations. Land and property information are vital to some sectors of the professional services industry. While some of this is happening already more can be done to make access to the data fast, simple and cheap.
Lack of trust in e-transactions – transactions carried out electronically and remotely over networks are often seen as intrinsically less safe than paper-based transactions. Whether this is true or not is not the issue, but rather how to address this perceived loss of privacy and security in e-transactions. (See end section for NICTA work in this area.)

Cloud services – the public cloud provides significant opportunities to lower costs, provide scalable services and also improve resilience to certain kinds of IT failures. At the Federal level, AGIMO has developed a draft Cloud Computing Strategy. If government can set an example by showing that cloud based approaches work for exacting government needs, this may lend confidence to providers of Professional Services using similar approaches.

Relevant NICTA work

NICTA’s research and business team agenda relates directly to the needs of the Professional Services sector. We would like to highlight activities, skills and projects of particular relevance.

- **Trusted networking** – NICTA’s trusted networking research develops methods for evaluating privacy loss in collaborative systems, including mobile peer-to-peer and social networks. This kind of quantitative and transparent approach to privacy will become more important as increasingly complex and high value services are delivered remotely or need to draw on information and expertise distributed geographically.

- **Digital Productivity Showcase** – with support from the NSW Government NICTA will launch the Digital Productivity Showcase in February 2011. The Showcase is a space where SMEs, multinationals and end-users can co-develop solutions designed to improve both personal and business productivity. This is an ideal space in which to develop tools and technology for increasing the productivity of professional services.

- **The Australian e-Government Technology Cluster** is a vibrant group of participants from industry, government and the research community which provides a forum for connecting the e-Government community, stimulating new business opportunities and promoting innovation and new business opportunities. Currently, NSW Trade and Investment is part of the Cluster as well as over 40 participants from industry. There is scope for other NSW government agencies to join the cluster. The Cluster provides a useful forum for professional service providers in the government sector to become familiar with the latest technology advancements in the field.

- **Lending Industry XML Initiative (LIXI)** Many professional service sectors are highly fragmented. The inherent nature of what is a largely personal delivery model for professional services allows many small firms to operate (think accounting, legal and architectural). An outcome of this state is that being able to effect industry wide change to practices can meet with resistance, either through natural barriers (for example lack of time, capital or expertise to embrace change) or more strategic positioning by firms. Quite frequently intervention is required by a trusted, knowledgeable party to bring different organisations in the same industry together – to speak the same language, to interpret between each other – to establish a clear platform for industry wide progress. NICTA played such a role in the Australian Lending industry XML Initiative (LIXI) endeavour to rationalise processes across the lending industry. NICTA’s reference architectures, process models, software blueprints and implementations have provided guidance to hundreds of companies in the lending industry towards technical interoperability. The potential productivity savings to the economy are profound – with saved costs and accelerated speeds in processing loan applications down

---

from 14-22 days to a possible 14-15 minutes. NICTA believes this role will also be critical in many other areas of financial services, such as within Superannuation, and in many areas of inter-governmental operations (licensing, permitting, titling and taxing). Much of this expertise and resulting systems could be exportable in their own right across the Asia Pacific region – creating new professional services markets for supporting NSW firms.

- **Big Data** A rapidly emerging and important trend in just the last three years is towards the analysis of so-called ‘Big Data’ – capturing and turning data into actionable insights. The sectors which can benefit from Big Data approaches cross every aspect of the economy – from health to retail to resources. Professional service firms can also use Big Data techniques as a critical component of their business – to understand their customer base and segmentation better, to provide more targeted offers, to locate correlations in disparate variables uncovering risks or potential frauds. NICTA is engaged in a series of Big Data Proofs of Concept in the NSW financial services sector, developing software and techniques for data capture and management, custom analytics using machine learning approaches, and providing near real-time results from terabyte-sized databases. Our collaboration with the Sydney based financial services firm SIRCA holds the promise of providing a valuable services layer on top of raw market data, such as that provided by the ASX.

- **Business Process Management** NICTA is working on several projects\(^9,10\) for improving the understanding and technology for managing business processes. The tools are designed to solve problems in the following areas:
  
  - Building integrated, scalable and adaptable software systems across organisations
  - Performance modeling and simulation for enterprise systems
  - Web-like architectures for more flexible process interoperation
  - Scope, cost and effort estimation for Service Oriented Architecture (SOA) projects
  - Managing multiple related business vocabularies within and across organisations

Public sector ICT systems that deliver services to citizens are expensive to develop due to the extensive legislative and regulatory framework within which they must operate. Such requirements are subject to frequent change, leading to repeated effort in keeping ICT systems current and certified, and these issues are not just confined to the public sector. Process compliance is now a major concern for all public and private sector businesses. NICTA has developed business process compliance tools for:

  - Better understanding of regulatory requirements for business processes
  - Design and maintenance of compliant-by-design business processes
  - Reducing maintenance costs of business processes subject to changes in the regulatory requirements
  - Increased capability of auditing business processes so information systems can be audited and screened automatically.

- **Cloud Services** The delivery of professional services such as accounting, or mediation of the delivery of professional services in the case of Kaggle, 99Designs and Freelancer are increasingly using Cloud based infrastructure as a foundation component. NICTA is building an extended set of tools and applications to monitor, manage and optimise the use of Cloud-based technology in a multi-cloud environment. This tool and management set is designed to address concerns of CIOs about the robustness, transparency and control of vendor-specific Clouds and the “hybrid” Clouds which could be used by security conscious organisations like banks and government agencies.

---


Professional service organisations, as in any business, will want as much control over how their applications are running, stored and supported in the Cloud as they do with their own in-house infrastructure. NICTA is a leader in “Elastic” Cloud, which enables the blending of in-house and external cloud provisioning for enterprise applications. In addition we are collaborating with Australia’s first provider of “Platform as a Service”, with their focus being the provision of ‘business services’ (accounting, content management, CRM systems) to Australia’s SMEs and regional markets.

Future Initiatives

NICTA is investing in a number of related areas where it believes critical sources of Australia’s and NSW’s future competitive advantage may lie. These include creating the technology platform to support an Agile Enterprise and Knowledge Management system for large scale organisations, including government administration. The integration of a number of nascent capabilities around Business Process Compliance technologies and Business Rule implementation linked with real-time data pipeline management, analytics, knowledge capture and distribution approaches holds the potential for creating the Professional Services tools of the future.


For more information, please contact Liz Jakubowski liz.jakubowski@nicta.com.au or Dean Economou dean.economou@nicta.com.au