AWPA ICT Workforce Issues Paper
Response to Questions for Discussion

Please submit responses to these questions, or any other comments on the issues in this paper, to the AWPA Secretariat at ictstudy@awpa.gov.au by 8 February 2013.

Note: Please expand boxes as needed to fit your responses

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1. Are there any gaps in the definition of the ICT workforce provided in this Issues Paper?

The broad categorization of ICT professionals, ICT managers, and ICT support technicians is useful, and could be adopted more broadly. It would also be useful to explicitly consider ICT Educators (teachers, academics trainers) who are essential to the 3 other groups. The ICT Educators constitute a workforce that contributes directly and indirectly to everything else and are not mentioned.

The 18 specific occupations is not as clear a list. ICT forensic investigators and data mining experts are two examples which rapidly sprang to mind that do not neatly fit into the categories. The problem is that new technology leads to changes in specific occupations. So there are constantly new gaps, but probably no easy alternative.

2. How can government, industry, professional associations and the training sector collaborate to collect and share data on ICT skills demand and supply?

Three suggestions.

1. Improve the timeliness of data so that accurate projections of in-demand skills can be made. For example, how long has it taken for mobile application development to show up, or that certain skills are less needed.

2. Ensure that the various groups reporting and collecting data are reporting on the same figures and that the data collection is complementary.

3. Align statistical data collected and issued by government with the ICT fields of study to enable accurate assessments to be made. Including all the ICT disciplines under "IT" makes it hard to understand the current picture or make future predictions.
3. How can industry partner with schools to improve the provision of ICT education and career pathways?

A key problem is that schools do not have a clear idea about what ICT careers are possible. The lack of knowledge spans teachers, students and career counsellors.

Four suggestions to improve the collaboration - (1) develop/extend a scheme like Scientists or Mathematicians in Schools to explicitly include ICT professionals, i.e. young ICT graduates in industry visit schools to discuss their exciting careers with students who can engage with and relate to them; (2) expose more students to the ICT industry through better work experience opportunities; (3) facilitate school students to undertake IT projects for real clients such as are offered at most universities in project units - Web site development/prototyping would be practical, for example; (4) industry provide teachers with workplace experience so they appreciate what an ICT career entails.

4. What is working well in relation to partnerships between industry and schools?

The ICT Skills in the Workplace forum indicated that there was little coordination or knowledge of the range of activities.

That being said, many companies are supportive of employees going to speak at a range of schools and universities. Current employees help explain what ICT careers are really all about.

5. How can education and training providers produce ‘work ready’ graduates?

As reported in the Issues paper there is a perception from industry that university graduates are not ‘work ready.’ I believe some research should be done to clarify what is the exact situation.

Many of the ICT graduates from the university programs are work ready, especially those that include a component of work integrated learning. Building on such programs is important, and best practice needs to be shared.

Increasing the number of industry people – preferably young ones – speaking to students during courses helps to set expectations.

Ensuring that the curriculum contains the latest technology developments is important.

Education and training providers need to overcome the many disincentives to rapid curriculum change.

More reliable and timely industry skills forecasting would allow the educators to accurately meet industry needs. Something better than the current situation where “we won’t tell you what we want but we will blame you if the graduates aren’t ready for what we need.”
6. How can industry make career pathways to specialised ICT careers more transparent to prospective workers?

There are certainly challenges as new fields keep emerging. To give three examples: mobile application development, business analytics, and digital forensics investigating security incidents properly all have some very recent demand. It can be argued whether they constitute new specialised ICT careers, but the content for these skills needs to enter ICT courses. One difficulty is that the current teaching workforce may not have the skills and there is not much being done or incentive provided to retrain the current teachers.

7. How can small to medium enterprises (SMEs) be supported to provide entry level opportunities?

More interactions between SMEs and universities would help. If SMEs run projects that are potentially useful for their organisation, they get to see potential graduates, and the students see possible jobs. Care needs to be taken in choosing appropriate projects, but many universities have people experienced in finding projects that are useful learning experiences for students and helpful for the SMEs.

The Victorian Government has had several schemes over many years that have helped, including specific projects that support SMEs. The START scheme led to some successful SME interactions. A very recent example is the ICT Student Accelerator voucher program which has attracted new SMEs to engage with universities and allow possible work to develop.

8. What can be done to boost engagement in ICT apprenticeships and traineeships and to create more entry-level opportunities?

The answers to questions 6 and 7 are relevant.

Resetting expectations would be helpful. Some skills need to be moved from university courses to TAFE or private providers, such as network set up and security, and there should be new opportunities for handling big data.

Allowing for some part-time work would also be useful. There are many successful examples where students studying ICT courses were working part-time. Lightweight brokering of the opportunities may be valuable.

There may also be possibilities for students working with schools and the not-for-profit sector to gain internship experiences.
9. Which existing training courses, across higher education and VET, are successful in creating 'T-shaped' graduates with both technical and 'soft skills'?

Courses which emphasise communication skills certainly help. During accreditation experiences, those students exposed to real team-based projects in industry become far more aware of the ‘soft’ skills that are needed for successful projects. Software engineering students tend to be better and more rounded than computer science students from my experience. However, almost all ICT degrees allow electives which let students choose subjects to ensure their education is balanced.

One observation, while industry definitely prefers T-shaped graduates, is that many job ads accentuate the technical skills, which leads students to underestimate their importance.

10. How important is skilled migration to meeting the needs of the ICT sector?

If the primary mechanism for skilled migration is overseas students undertaking Australian ICT courses, we have a potential large win-win situation. In ACDICT’s opinion this would be critically important.

In general, skilled migration is Important as we are unlikely to be able to fill the skills vacuum with Australian graduates in the near future, especially at the specialist end.

Future planning should be concerned with growing the ICT skills base of domestic students and the current workforce.

11. How can ICT businesses draw on the mature aged workforce to support new and emerging skills demands?

A key roadblock for the mature aged workforce participating more fully is retraining and who should pay both for the development costs and the delivery costs. Universities and training providers have the possibility to develop new materials, but need more certainty that companies will be happy to guarantee a certain number of student places.

ICT businesses probably need to be more supportive of sending students to training rather than regarding as someone else’s expense.

It is likely that considerable parts of the retraining can be done online

New and emerging skills demands impact on all existing workers as well as the mature aged workforce. It would be more strategic to think of effective ongoing professional development for all workers irrespective of age.
12. What methods can be utilised to improve participation in the ICT workforce from women, Indigenous Australians, people with disabilities and retirees? What support is required to enable the increased participation of these groups in the ICT workforce?

It has been a challenge to broaden the participation of nontraditional groups in ICT careers. Each of the four groups mentioned are complex, and each requires a different approach and support. For example, the lack of women in the ICT workforce can be traced back to high schools where female students encounter much negativity such as stereotypical behavior of fellow students and teachers, the lack of female role models and the lack of a gender-inclusive curriculum. There have been some promising programs, such as Digital Divas for encouraging women.

The problems of improving participation by Indigenous Australians certainly include other factors such as culture and community.

People with disabilities require a whole range of accessibility considerations (as outlined by W3C) depending on the context and disability.

“Retirees” applies to a wide range of former workers with a wide range of ICT skills and experiences. Retraining schemes will therefore require prior learning assessment and tailored programs.

13. By what mechanisms can government and industry and professional associations encourage and support SMEs to engage with skills development?

Please refer to the comment made previously in answer to questions 7 and 8.

The engagement by industry of skilled and capable students (secondary and tertiary) in authentic industry projects will benefit all participants.

14. What strategies can be employed to encourage employers to invest in upskilling and lifelong learning for their workforce? How can industry and training providers collaborate to provide these opportunities?

An honest discussion of whose responsibility it is to provide the lifelong learning would be helpful. Often industry is shifting responsibility to universities and government, and conversely, specialized knowledge is expected to be provided by industry from the university perspective. I am optimistic that industry and training providers can collaborate, but first there needs to be good conversation.

There is often lack of knowledge of what really happens at the respective organisations due to insufficient interaction.
15. What can be done to address the ICT industry’s concerns regarding the retention of skilled workers?

The industry could work harder at being an attractive place to work. Many ICT firms have a reputation as unpleasant employers with a lack of engagement in skills development and hiring new graduates. In the dot com period employers were reluctant to invest in training as workers left to go other places, and the experiences that happened then have not been fully overcome.

16. What are the implications for the Australian ICT sector and workforce of the increasing globalisation of both the ICT sector and the ICT workforce?

Globalisation makes it increasingly easy for firms to outsource ICT requirements, and therefore reduce their local need (which gets around the skills shortage). The consequence is that the ICT workforce in Australia becomes further degraded. A consequence in the long term will be an inhibition of the ability of the Australian economy to innovate and compete, as almost all innovation in the digital economy will have a significant ICT component.

Enhancing and retaining domestic capability is particularly strategic as the capabilities, expertise and wages of developing countries increase and outsourcing becomes increasingly costly and non-viable.

17. How can government, industry, and the training sector work together to ensure that the Australian ICT workforce is able to adopt and contribute to new technology across all industry sectors?

A key strategic approach to national innovative capability and capacity must start with secondary education. Students and teachers must become engaged with creating and innovating not merely being users and consumers of technology. This is about thinking and problem solving that computational thinking affords. Computational thinking embedded in all disciplines is crucial to innovation and Australia’s future prosperity. The time to get this right is now.

More broadly, the efforts around ICT Skills and the Digital White Paper have initiated a range of conversations and highlighted interest. Continuing the engagement is essential.

Any other comments on the Issues Paper

Keep the discussions going.