Preamble

This 'working paper' is one environmental scan of a series developed to bring into focus a discussion of the directions of industry and labour market in Australia and the ways tertiary education may respond.

The 'Knowledge Worker of 2015-2020' is a paper that it is intended to be used for discussion among RMIT University staff. This paper was written as a result of a round-table discussion, using scenario planning techniques, to frame a view of the working environment and needs and skill requirements that will confront the next generation of VET and HE graduates. This paper is not intended to reflect a global view of society now or in the future, but is intended as a starting point for further discussion and consideration.

In order to expand the usefulness of this 'work in progress', readers are strongly encouraged to respond to this paper. Your feedback would be very much appreciated, please forward it to ircu@rmit.edu.au.

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This paper will be modified as feedback is received and the updates will be posted in the IRCU's web portal:

http://www2.rmit.edu.au/departments/planning/ircu/

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1. Introduction

Participation and Attainment in Tertiary Education

The last two decades have seen a massive increase in participation in tertiary education across the globe. Enrolments in higher education have increased from 40 to 80 million for reasons including:

- Aspirations of individuals to be educated and gain qualifications
- Socio-economic demand for a highly skilled work force
- Growing recognition of the role of advanced knowledge and its application in underpinning modern civilization.

Enrolments in Australian universities increased by 138% from 1983 to 2003. In 1983 there were 348,577 enrolments compared to 829,499 in 2003. By 2015-2020 there will be about one and a half million students enrolled in Australian universities.

Furthermore, the number of students enrolled in the public VET system increased to 1.6 million in 2002. This means that more than one in ten Australians aged over 15 years studied in the public VET system. By 2015-2020 there will be about 2.2m students enrolled in the public VET system.

Participation rates in the Australian higher education compare favourably to other OECD countries. It is expected that 65% of young Australians will enter tertiary education during
their lifetime (72% females and 58% males), compared to 47% of young people in OECD countries.

Australian post-secondary educational attainment also compares favourably to OECD counterparts. A 17-year old Australian can expect to receive 3.1 years of tertiary education compared to the OECD average of 2.6 years.

The levels of educational attainment have also increased in Australia. According to the ABS 2001 census figures, about one in every five Australian aged 15 and over that has a tertiary qualification. It is expected that by the year 2015-2020, one in every three Australian aged 15 and over will have a tertiary qualification.

Some contextual concepts that form a background to this paper:

- Society has been changing in recent decades
- Economy is globalised; education as a sector has also been part of this transformative process
- Knowledge is transforming rapidly, dissemination and application of knowledge is a driving force of development
- Traditional barriers are being removed; people and are fast becoming a mobile force, shifting balance demographic balance in many countries
- Rapid social and political change, having a lasting impact on countries and regions
- Shifts in demographic trends worldwide (ageing, employment, mobility, expectations)
- Learning, skill formation and reskilling becoming more critical to sustain engagement and participation in society
- People’s life expectations are changing
- People’s perspective of the society they belong to may also be changing
- Peoples career becoming more fragmented and cyclical (jobs and education are not lasting one whole life!)
- Enabling technologies transforming society/economy and driving change in emerging knowledge societies

Key issue for consideration:

For the next generation of students, how can RMIT
a) remain relevant and viable in a more competitively aggressive environment
b) remain attractive to an even more discerning and selective student population, both onshore and offshore?

Some questions that this raises for discussion
- What are the educational requirements of graduates in 2015?
- How do we integrate the student’s contextual work/life experience and the learning experience?
- Can teaching address these issues, particularly generic skills and internationalisation
- How should we market and position the institution for the medium to longer term?
- Does this change the way we should we think about outcomes and quality?

2. What is a Knowledge Worker and why should we consider this question?

The concept of a knowledge worker is very broad. It can encapsulate workers in trades who are utilising skills and technology to develop better ways of working (e.g. green plumbers and builders working to provide more energy efficient houses), to designers of technological materials using ICT principles and information workers such as teachers or employees in medical fields utilising technology and working within the social developments and needs of society, for example). Below is a listing of some “stratification” of the workforce, but almost all workers will have some elements of the “knowledge worker” in their activities.
We should consider the question of the environment and needs of knowledge workers because meeting these needs will be critical to the ongoing relevance of an organisation such as RMIT, whose impact is ultimately measured by the usefulness of its activities to the graduate and more broadly to the contribution to the development of knowledge in society.

3. Context

Development of this scenario paper links to a number of activities undertaken by the Institutional Research Consultancy Unit:

- Scanning of Australian and International Industry Priorities
- Development of Australian Industry Economic Analysis
- 11 Industry Dossiers 2002/03
- 7 Industry Dossiers 2003/04.

The purpose of considering the knowledge worker of 2015-2020 is to enable consideration of possible changes in industry and social and regulatory frameworks. This will allow RMIT, as a provider of educational and consulting services to consider industry developments in the context of changes in society.

2015 – 2020 is not far off. By 2015, a student entering an undergraduate degree (from school) will have been in the workforce for 7-8 years and will be able to begin to exert influence on their organizations and their profession. Students undertaking lifelong learning may have been involved in several industries. Many will have undertaken postgraduate study or TAFE programs or degrees, building on their experience in the workplace.

What sort of issues will impact on the way in which their workplaces develop and how will changes in their industries unfold?

4. What influences will work to define the Knowledge Worker of 2015-2020?

Influences by themes:

Theme 1: Globalisation and the need for identity within a cohesive social group
- E.g. Globalisation of capital and a world/network economy render geography less important for the knowledge worker, or, the knowledge worker can influence these trends (however, all workers are affected by this, but the ability to influence is reduced for the service worker / operator)
- Internationalisation of financial markets, regulation and standards countered by a re-centralising of identity / belonging (around geography, nationalism, culture, religion, status/class)
- International Instability – economic, military, political, environmental

Theme 2: Movements in social norms and demographic change
- Rise of individualism or redefinition of “community” to a smaller unit
- Population ageing (Australia) but world populations still growing strongly
- Stratification of the workforce – relatively small but growing proportion with access to data for influence
  - Bill Gates Class
  - Knowledge Developers (small %) – can direct an industry
  - Knowledge Operators (larger %)
  - Service Workers (biggest %)

Theme 3: Increased prevalence of information and simulation technologies
- Integration of Information / simulation Technology at the core of exchange (transactions) and production
• Convergence of information / simulation technologies, leading to increasing pace of change

Theme 4: Movements in environmental understanding and priorities
• Impacts of environmental degradation and the Rise of environmentalism increases

Commentary:

Many of the directions we see in western societies will continue to strengthen. The fluidity of global direction, politically and economically, is reflected in the movements of capital. International borders are no longer barriers to doing business and transfer of wealth makes investment decisions possible over even shorter timeframes. The reduction of the influence of the nation state in business is reflected in international instability, as movement of knowledge-based ideas and people becomes easier, as a result of investment and labour market policy, unilaterally and multilaterally. On the other hand, nation states are still able to restrict or target migration so that these trends may not be developing evenly across the globe.

This breaking down of boundaries of the nation state may lead to issues of social cohesion and identity. Some of these may be expressed as affirmative nationalism, in the context of continuing instability in particular regions of the world. In this context it is likely that Governments will tend to continue the present trend towards developing enabling policy settings rather then trying to “pick winners”, in order to maximise opportunity.

In western societies, the population will continue to age overall and the relationship of the overall health of society to government policy will become more prominent. Continuing demand for education may become less important as an electoral issue. However, the impact on the environment will continue to become more prominent. Environmental impact will be built into industrial and social development in developed countries and recognised as a critical lever of growth in developing societies. Trading in environmental outcomes/commodities will become more commonplace, requiring a sophistication of understanding amongst businesses, governments and individuals that moves beyond activism and regard for environment as a “cost”. Although this thinking is becoming more prevalent, mainstream economic thinking does not necessarily take a broad system view.

Technology continues to develop and in this context the workforce may become more stratified. All workers will need familiarity with technology and the ability to utilise it in the workplace, but a small group of knowledge developers with skills of synthesis and a broad understanding of the relationship between technology and the development of society and the economy will lead developments in the industrial sphere.

The ubiquity of information technology enables rapid movement of ideas and images, but may leave those without the ability to deal with technology disadvantaged.

5. Ways of working for the Knowledge Worker in 2015-2020

• Not bound by workplace geography
• Varying social engagement of the workplace
• Work becomes pervasive/ubiquitous
• Work becomes family friendly??
• Facilitated by technology
• Nature of Physical and virtual office will change with conversion, immersion and simulation
• Thinking vs. Operationalising
• “Other languages”
• Being adaptive
• Reskilling – incremental and fluid
• Formal or informal → lifespan of qualification? → Become more informal in organic evolutionary way
• Technical skills v ability to communicate
• How you understand discovery in a social context. How to discern?
• Operate→Customise→Innovate

Commentary:

How will the way of working respond to these broad movements in society?

For some, the workplace will tend to move further away from the industrial revolution model – that is defined hours in a defined place with firm hierarchies into more flexible models, in recognition of needs of individuals and the market. The move away from the defined workplace geography, where it occurs, is likely to be in industries and/or occupations where technology can respond to these needs. However, in many industries this will not occur and flexibility will not necessarily be an option. This notion of flexibility also has the potential to limit opportunities.

The nature of the workplace is also likely to change in many cases. Increasing understanding of hazards will bring about safer workplaces and the development of networking (including internationally) may bring about a more pervasive working life for some involved in knowledge-based industries.

How will the thinking of the knowledge worker need to change by 2015-2020, to deal with developments in society?

A key requirement will continue to be the ability to be proficient and adaptive in a key discipline, or disciplines, in the industry of the knowledge worker. However, other skills will also become increasingly important, including the ability to operationalise a variety of tasks to enable rapid development of ideas and products in response to the internationalised market. This leads to the ability to customise and then to innovate. The knowledge worker’s ability to innovate and to adapt thinking to circumstance will be one of the defining advantages in the fluid information society.

It will be possible to identify discipline and graduate attributes that reflect this ability to innovate in the context of industry-related directions.

A second critical skill will be the ability to understand and work with the “languages” of different disciplines, e.g. the engineer to understand and develop products with the accountant or the marketer; the social worker to be able to develop communities in conjunction with the bureaucrat.

How will career development be effected?

Reskilling is likely to be incremental and adapted to shorter-term needs. Therefore the nature of the qualification and its lifespan may need to be augmented by acquisition of skills in a more organic and fluid way. This will require the ability to discern learning needs.

Discovery for individuals and industries will occur in the social context of the influences identified above. The knowledge worker will need to be in tune with broader societal developments (both nationally and internationally) in order to place their innovative contribution in context. A critical skill will be the ability to discern and respond to social trends from the perspective of the industry and will require networks, synthesis of information and a broad view.
Some key issues:
• Power moves to global capital.
• What is the role of government?
• (How) Is the individual enfranchised?

Some technologies:
• Biotechnology
• IT, immersion, synthesis/simulation
• Environmental Technologies (and their being brought into mainstream "market")

Some key social trends:
• Environmental degradation and Concern, differential across geographies and economies
• Social Cohesion
• Trade off between “Hands Off” (primacy of individual) vs. need for belonging may be developed around individualised (i.e. many) views of “community”
• Working life issues

6. A reflection on the influences discussed in this paper

It is also worth considering that, even though this discussion paper presents a view of the future, dealing with future events is rather unpredictable. There is a certain assumption about the ‘knowledge worker’ in 2015-2020– which may suggest some degree of continuity of what we currently see happening. However, many activities and views may be narrow and narrowing, despite the ability of ideas to flow more easily. Growth in multilateral developments may slow down. Peoples continued personal experience and engagement with world may lead to a need for belonging that is manifested by a return to narrow boundaries (whether personal, community or defined by nation states) and global developments may be perceived as dangerous to the individual.

There are inequalities and tensions between various groups – e.g. ageing, which may manifest themselves internationally. For example, there may be a significant need for development technology in Africa, including development of information technology. This could come from older people elsewhere, because of Africa’s low average age and lack of educational opportunities.

In contrast, because of Australia’s relatively older population, we will need young people (for service provision and the tax base). Therefore it is possible that service workers may come to Australia (as opposed to skilled migration). There may be domestic political implications for a government with a desire to not control industries too closely.

In this context, could Africa become increasingly reliant on aid, to develop economically and environmentally, while at the same time Western countries unlikely to experience a boom again because of the age/work profile, (it will be more widespread).

7. 2015 Stakeholder Framework. How do groups within society respond and engage?

These responses cover the range of responses that frame and reflect society. Below is a matrix that identifies possible stakeholder concerns in 2015-2020 and how they may respond in this context. This matrix was developed to demonstrate not only how various groups in society may react but also as a starting point for consideration of the nature of the graduate in 2015 and the way in which this is relevant to RMIT. These considerations will affect the way in which individuals will innovate and the way in which they will relate to their disciplines, professions, industries, employers and society.
<table>
<thead>
<tr>
<th>Aspect → Stakeholder ↓</th>
<th>TECHNOLOGY</th>
<th>SOCIAL</th>
<th>ECONOMIC</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>INDUSTRY</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Environmental compliance at effective cost</td>
<td>Integrity – reputable</td>
<td>Relative stability</td>
<td></td>
</tr>
<tr>
<td>Efficiency of Technology</td>
<td>Attractive to govt’s, workers and community</td>
<td>Bigger profits</td>
<td></td>
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<tr>
<td>Optimise engagement in networked economy through:</td>
<td>Social benefit no longer a competitive advantage for company (embedded in industry-wide practice)</td>
<td>Want regulatory freedom, leads to tension with govt, “Flexibility” in labour market – trained, ready, cheap and disposable for operations / transactions but critical transformational skills / experience held as a strategic advantage</td>
<td></td>
</tr>
<tr>
<td>Comparative advantage</td>
<td>Ethical investment is normative</td>
<td></td>
<td></td>
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<tr>
<td>Replacement of technology</td>
<td>Practices of individuals</td>
<td></td>
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<tr>
<td>Adaptability</td>
<td></td>
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<tr>
<td>May want to profit from information</td>
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<tr>
<td>Massive computing power for decisions</td>
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<tr>
<td><strong>GOVERNMENTS</strong></td>
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<tr>
<td>As a means of ensuring compliance</td>
<td>Individuals to manage own affairs</td>
<td>Regime to promote longer term responsibility</td>
<td></td>
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<tr>
<td>To reallocate resources</td>
<td>Equity expenditure more selective</td>
<td>Freedom to integrate taxes and spending</td>
<td></td>
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<tr>
<td>↑ engagement, ↑ security, ↓cost</td>
<td>Exclusion of people by identity</td>
<td>Promote economic growth</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Want stability</td>
<td>Access to revenue and jobs</td>
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<tr>
<td><strong>INDIVIDUALS</strong></td>
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<tr>
<td>Access for meaningful engagement, but not uniform</td>
<td>Seek new relationships – less individualised – how individuals grant freedoms</td>
<td>Certainty about future (want it)</td>
<td></td>
</tr>
<tr>
<td>Everyday lives are transformed</td>
<td>Identity of self</td>
<td>Safety net (govt or other)</td>
<td></td>
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<tr>
<td>People more knowledgeable</td>
<td>Identity at work</td>
<td>Working mode: Choices across working life</td>
<td></td>
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<tr>
<td>Want to know more, e.g. via internet (expectations are higher)</td>
<td>Mew morality in response to business and government actions</td>
<td>by economic cycle or geography</td>
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<tr>
<td></td>
<td>Where do people belong – do they retreat</td>
<td>Sea change movement</td>
<td></td>
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<tr>
<td></td>
<td>Seek belonging – maybe more authoritarian “well being” will be important</td>
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<tr>
<td></td>
<td>Concern about security</td>
<td></td>
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<td></td>
<td>Possession = capability</td>
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<td></td>
<td>Population may be disenfranchised if power of capital exceeds power of government, or if government and capital are equally unpopular, how will individuals bring them to account?</td>
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</tbody>
</table>
Commentary:

For **industry**, technology provides opportunities to utilise scale and efficiency for other outcomes, including enhanced decision-making ability, development of means of ensuring environmental benefit and communications. This is undertaken in a context where industry has come to recognise more broadly the link between profit and the social benefit that can accrue to a well adjusted workforce. Industry has come to recognise the needs of the individual within the wealth creation process and links between industries. The tension between regulatory freedom and compliance may require special skills to manage in the context of a gradually expanding shareholder view (that enables further development of outcomes consistent with the triple bottom line).

For **government**, technology can be used as a method of ensuring compliance, allocation of resources and increasing engagement and security at a lower cost. The impact of technology on government processes also needs to be managed in the context of likely military developments and issues of individual freedom of association. On one hand, governments are likely to attempt to establish policy settings that enable individual freedom and development and on the other are likely to be motivated by concerns of security and exclusion where necessary. This dilemma will be a critical one for graduates in government. Longer-term policy settings are likely to require new ways of thinking about taxes and expenditure, in the context of promoting economic growth in a competitive international economic environment.

For **individuals**, technology is likely to enable access to information, but knowledge skills across the community will need to keep up. In addition, inequities will persist that mean that some still have better access to information and hence participation than others. Concern with identity and individual freedom, security and possession may be viewed in the context of the human need to belong: which may be found through work, or community, or through a more authoritarian exclusiveness. Alternatively, some may retreat from society to community and family, or away from cities, facilitated by IT. If the influence of capital continues to grow at the expense of government, it may be difficult for individuals to maintain control through traditional (i.e. participatory democracy) methods. These are important matters for graduates to understand for their relationships as knowledge workers with society and internationally. As in the past, individuals will seek economic security within the uncertainty of the future of government safety nets. Working choices may reflect this need for security.