What Industry Needs from ICT Graduates

Australian Council of Deans of ICT
Annual Council Meeting 2015
Canberra

Monday 6th July 2015

Presented by: John Craven
What is “Digital disruption”
Digital disruption – four revolutions in one

The Customer Revolution

Top Apps by Usage

<table>
<thead>
<tr>
<th>Rank</th>
<th>App</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Facebook</td>
</tr>
<tr>
<td>2</td>
<td>WhatsApp</td>
</tr>
<tr>
<td>3</td>
<td>Messenger</td>
</tr>
<tr>
<td>4</td>
<td>Instagram</td>
</tr>
<tr>
<td>5</td>
<td>LINE</td>
</tr>
<tr>
<td>6</td>
<td>Viber</td>
</tr>
<tr>
<td>7</td>
<td>KakaoTalk</td>
</tr>
<tr>
<td>8</td>
<td>Clash of Clans</td>
</tr>
<tr>
<td>9</td>
<td>WeChat</td>
</tr>
<tr>
<td>10</td>
<td>Twitter</td>
</tr>
</tbody>
</table>

1995
35MM+ Internet Users
0.6% Population Penetration

2014
2.8B Internet Users
39% Population Penetration

- USA
- China
- Asia (ex. China)
- Europe
- Rest of World

Source: ComScore, ITU, US Census

Time Spent per Adult User per Day with Digital Media, USA, 2008 – 2015YTD

Source: eMarketer, 2015, except 2008 (ComScore); Diffusion Millennium Project (2015), Steve. Other connected devices include TV and game consoles. Mobile includes smartphone and tablet. Usage includes both home and work. Ages 18+. The split with work months includes all time spent with that medium, regardless of activity.
The Market Revolution

Two Uber Executives Indicted in France
Charges include enabling illegal taxi services, illicit storage of personal data

Thibault Sangro, general director of Uber France, Mr. Sangro and Uber’s Director for Western Europe, Pierre Gourdel Comte, were indicted on charges, including enabling illegal taxi services, that could bring fines and jail time. PHOTO: AGENCIE FRANCE-PRESSE/GETTY IMAGES

We’re on a mission to connect the different parts of the events industry by reimagining the way creative professionals work with their colleagues and clients. Whether you’re an event planner in charge of a 300-guest wedding, a photographer leading a high-profile fashion shoot, or host of your company’s holiday party, HoneyBook organizes your jobs seamlessly, so you can focus on what you do best: creating unforgettable moments.

Market Networks – the next frontier

Integrated Value Chains
The Workforce Revolution

Far too much of our nation is waiting for new ways of working to arrive. We hear lots of rhetoric about how the nature of work will change, as if it relates to some unknown distant future. The fact is that it is happening now, and we need a broader recognition of this fact and policies and education that reflect it.

—Charles M. Vest

Percent of organization that is digitized currently/two years from now

On average, organizations reported that less than half (49%) of their businesses digitized, a figure that expects to balloon to 70% over the next two years.

Managers find some work processes both time-consuming and frustrating.

Figure 9. Current state of complexity of the work environment and business practices

Very complex: 25%, Complex: 49%, Somewhat complex: 22%, Simple: 4%, Not on our radar: 1%
**The Technology Revolution**

Becoming a digital business is no longer simply about incorporating these technologies into an organization—it’s about using digital technology to weave businesses into the broader digital fabric that extends to customers, partners, employees, and industries.

**Source:** Accenture Technology Vision 2015

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**Big Data**

Organizations should start to fully utilize their internal data to better understand customers and external external data.

**Source:** PwC Big Data – the next frontier for innovation 2012

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**Internet of Things**

Global Internet Device Installed Base Forecast

**Source:** Business Insider Australia October 2014

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**Top 10 Strategic Technology Trends for 2015**

- **Merging the Real World and the Virtual World**
  - Computing Everywhere
  - The Internet of Things
  - 3D Printing

- **Intelligence Everywhere**
  - Advanced, Pervasive, and Invisible Analytics
  - Context-Rich Systems
  - Smart Machines

- **The New IT Reality Emerges**
  - Cloud/Client Computing
  - Software-Defined Applications and Infrastructure
  - Web-Scale IT
  - Risk-Based Security and Self-Protection

**Source:** Gartner Top 10 Strategic Technology Trends for 2015 (October 2014)
How is Business Reacting to the Challenges
IT has a central role in Digital Transformation

**CEO** Shaping business strategy infused with technology—advising and executing on realities of existing capabilities, and the potential of emerging trends.

**CFO** Framing initiative investments, operations, delivery, and budget in terms of risk management and return on assets.

**CIO** Understanding, prioritizing, and addressing pain points and inefficiencies in analytics, business processes, and operations—retooling how work gets done.

**CMO** Partnering to implement new marketing tools with hooks into back-office data and transactions, while retooling to offer agile delivery for new digital solutions.

**CHIEF CUSTOMER OFFICER** Defining customer personas and journeys and exploring how experiences can be improved via existing and emerging technology.

**CHIEF INNOVATION OFFICER** Seeding technology-based innovation ideas while complementing the “art of the possible” with the “realities of the feasible.”

**CHIEF DATA OFFICER** Planning and execution of new capabilities and governance of internal, external, structured, and unstructured data sources and surrounding tools.

**CHIEF DIGITAL OFFICER** Collaborating to define a vision and roadmap, provide integration, security, and data services, and drive sustainable roll-out of digital services.

**CHAIRPERSON** Elevating technology to the boardroom agenda, represented as a strategic asset for profitability, effective and efficient operations, and growth.

At the corporation level performance varies widely

The journey to Digital Maturity requires a focus on four things:
1. Strategy – business and IT
2. Capability – grow new Digital Capabilities
3. Capacity – invest in people and technology
4. Operations alignment – to the new Strategy
The ICT Fundamentals have Changed

- Requirements
- Waterfall Methodologies
- Reporting
- Application Software
- Application Programming
- Continuous Business Improvement
- Agile
- Big Data and Analytics
- Business Platforms
- Software Defined Applications
The “New Age” IT Occupations

Data Scientist

Architect

Change Manager

Digital Experience Designer

Cyber Security Engineer

Source: Accenture
Skills Demand is Changing

While the traditional IT Skills will continue to be in demand a new and broader set of skills are needed to meet the demands of the Digital Age. Key skills for the digital age include:

- Innovation
- Communications
- Entrepreneurship
- Design
- Business Acumen
Australia is beginning to lag the rest of the world
Large parts of the Australian Economy are well positioned for Digital Disruption

Source: Deloitte Access Economics (2012)
Is Australia beginning to lose the Digital Race?

In its Compete to Prosper report commissioned by the Business Council of Australia and released a year ago, McKinsey warned that Australian companies are “behind on technology, uptake, external orientation, innovation and learning.”

“Australia has been Stalling Out. The only way they can jump-start their recovery is to follow what Stand Out countries do best: redouble on innovation ……..”

Index Factors:
- Supply – infrastructure, access
- Demand – consumer trends, internet savvy
- Innovation – funding, start up culture
- Institutions – government policy, laws

Source: Business Spectator June 2015
Universities have a critical role to play

Table 1: ICT employment forecast in selected occupations, 2014 to 2020

<table>
<thead>
<tr>
<th>Occupation grouping</th>
<th>2014</th>
<th>2020</th>
<th>Average annual growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICT management and operations</td>
<td>184,907</td>
<td>222,080</td>
<td>3.1%</td>
</tr>
<tr>
<td>ICT technical and professional</td>
<td>213,107</td>
<td>247,919</td>
<td>2.6%</td>
</tr>
<tr>
<td>Other ICT occupations</td>
<td>207,738</td>
<td>230,484</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Total ICT workers</strong></td>
<td><strong>605,752</strong></td>
<td><strong>700,483</strong></td>
<td><strong>2.5%</strong></td>
</tr>
</tbody>
</table>


Table 1.5: ICT research and development expenditure by country

<table>
<thead>
<tr>
<th>Country</th>
<th>Share of total research and development*</th>
<th>Year**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>54%</td>
<td>2013</td>
</tr>
<tr>
<td>United States</td>
<td>32%</td>
<td>2011</td>
</tr>
<tr>
<td>Singapore</td>
<td>30%</td>
<td>2011</td>
</tr>
<tr>
<td>Canada</td>
<td>27%</td>
<td>2013</td>
</tr>
<tr>
<td>New Zealand</td>
<td>19%</td>
<td>2011</td>
</tr>
<tr>
<td>Japan</td>
<td>18%</td>
<td>2013</td>
</tr>
<tr>
<td>Italy</td>
<td>18%</td>
<td>2012</td>
</tr>
<tr>
<td>France</td>
<td>17%</td>
<td>2012</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16%</td>
<td>2012</td>
</tr>
<tr>
<td>Spain</td>
<td>15%</td>
<td>2012</td>
</tr>
<tr>
<td>Germany</td>
<td>12%</td>
<td>2012</td>
</tr>
<tr>
<td>Australia</td>
<td>10%</td>
<td>2011</td>
</tr>
</tbody>
</table>

* ICT R&D calculated as the sum of R&D in the following industries under ISIC Rev. 4 classifications: D261, D262, D263, D582, D61, D62, D63.
** Latest available year
Source: OECD, STAN R&D Expenditures in Industry (2015)

600,000 ICT workers represents about 5% of the Australian workforce
What is Business Looking For?
THE WAR FOR DIGITAL TALENT HAS BEGUN
Rethinking the Talent Journey

Core Technology Skill

Business and Industry Knowledge

Digital Talent

Design Skills

Innovation and Entrepreneurship

STEAM: Adding arts skill sets to the IT team

The new IT worker is technical, functional, client-ready, and creative, and may have non-traditional skills.

Source: IT Worker of the Future – Deloitte 2015


Chart 2.2: ICT workers’ field of education, 2011

Source: ABS Census (2011)
The “soft” skills are critical

Table 2: Most important selection criteria when recruiting graduates, 2014 (%)

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication skills</td>
<td>48.6%</td>
</tr>
<tr>
<td>Academic results</td>
<td>24.3%</td>
</tr>
<tr>
<td>Teamwork skills</td>
<td>22.4%</td>
</tr>
<tr>
<td>Aptitude</td>
<td>21.5%</td>
</tr>
<tr>
<td>Interpersonal skills</td>
<td>20.6%</td>
</tr>
<tr>
<td>Leadership skills</td>
<td>19.6%</td>
</tr>
<tr>
<td>Work experience</td>
<td>19.6%</td>
</tr>
<tr>
<td>Cultural fit</td>
<td>18.7%</td>
</tr>
<tr>
<td>Motivational fit</td>
<td>17.8%</td>
</tr>
<tr>
<td>Adaptable</td>
<td>14.0%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selection Criteria</th>
<th>2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relevant qualifications</td>
<td>14.0%</td>
</tr>
<tr>
<td>Willingness to learn</td>
<td>12.1%</td>
</tr>
<tr>
<td>Problem solving skills</td>
<td>11.2%</td>
</tr>
<tr>
<td>Passion</td>
<td>10.3%</td>
</tr>
<tr>
<td>Customer service</td>
<td>8.4%</td>
</tr>
<tr>
<td>Analytical skills</td>
<td>6.5%</td>
</tr>
<tr>
<td>Technical skills</td>
<td>6.5%</td>
</tr>
<tr>
<td>Integrity</td>
<td>3.7%</td>
</tr>
<tr>
<td>Organised</td>
<td>3.7%</td>
</tr>
<tr>
<td>Extra-curricular activities</td>
<td>3.7%</td>
</tr>
</tbody>
</table>

Source: Graduate Careers Australia – Graduate Outlook 2014
19 partners with a mission
Information technology is a key innovation driver of our economy and critical to the sustainability of Germany. Germany's IT industry therefore needs qualified leaders who can drive innovation and control the transfer of technology.

Business, science and government therefore have the Software Campus initiated to promote the development potential of young talents and train a new generation of leaders with excellent IT background. The Software Campus therefore is responsible for the long-term strengthening of the innovation and business location Germany.