Enhancing Technology Innovation Through Diversity of Thought

Liz Coulter
Enhancing Technology Innovation Through Diversity of Thought
Why I am interested in Diversity?
FAMILY INFLUENCE
1984: IT Course: 13 Women out of 300
Why I am interested in Diversity?
Achieves greater diversity of thought and innovation

Improves problem solving

Expands the qualified employee pool

Improves productivity

Reflects the diverse customer bases

Improves the “bottom line”
Striving for a representative workforce through diversity, inclusion, and equity

Why Does Diversity Matter?

Workplace diversity contributes to:

- **Creativity**
- **Productivity**
- **Innovation**

Companies in the top quartile for gender diversity are 15% more likely and those in the top quartile for ethnic diversity are 35% more likely to have financial returns above their respective national industry medians.

What Would a Diverse Workforce Look Like in Higher Education IT?

The overall composition and individual characteristics of a diverse higher ed (HE) IT workforce would be representative of the diversity found in the overall labor force. While diversity is a complex set of cultural, social, and ancestral variables, this snapshot is limited to age, ethnicity, and gender.

Young professionals are underrepresented in the higher ed IT workforce when compared with the overall U.S. labor force.

The HE IT workforce is older than the U.S. labor force, perhaps as a result of a stronger tradition of employee retention. HE IT workers remain at their institutions more than two times longer than the typical U.S. worker stays with a single employer (median of 10 years versus 4.6 years).

The median age of HE IT professionals is 48 years, while the median age for the U.S. workforce is 42 years.

<table>
<thead>
<tr>
<th>Role</th>
<th>Median Age</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIOs</td>
<td>53</td>
</tr>
<tr>
<td>Managers</td>
<td>48</td>
</tr>
<tr>
<td>Staff</td>
<td>43</td>
</tr>
</tbody>
</table>
Nonwhite workers are underrepresented in the higher ed IT workforce when compared with the overall U.S. labor force. Nonwhite workers make up 15% of all positions in IT and 34% of the U.S. labor force.

**Ethnicity**

But the HE IT workforce is more ethnically diverse now than it was five years ago, especially in CIO positions:

<table>
<thead>
<tr>
<th>Year</th>
<th>CIOs</th>
<th>Managers</th>
<th>Staff</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>4%</td>
<td>4%</td>
<td>4%</td>
</tr>
<tr>
<td>2013</td>
<td>10%</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>2015</td>
<td>15%</td>
<td>13%</td>
<td>12%</td>
</tr>
</tbody>
</table>

Percentage of nonwhite respondents to the 2015 ECAR workforce survey.

**Gender**

Women are underrepresented in the higher ed IT workforce when compared with the overall U.S. labor force:

<table>
<thead>
<tr>
<th></th>
<th>HE IT workforce</th>
<th>U.S. labor force</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>67%</td>
<td>53%</td>
</tr>
<tr>
<td>Female</td>
<td>33%</td>
<td>47%</td>
</tr>
</tbody>
</table>

The proportion of women CIOs has become larger since 2010, but there is a smaller proportion of women IT managers and staff in higher ed than there was five years ago.

<table>
<thead>
<tr>
<th>Role</th>
<th>2010</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>CIOs</td>
<td>23%</td>
<td>27%</td>
</tr>
<tr>
<td>Managers</td>
<td>38% -30%</td>
<td>43% -40%</td>
</tr>
<tr>
<td>Staff</td>
<td>43%</td>
<td>40%</td>
</tr>
</tbody>
</table>

Across the higher ed IT workforce, men outearn women by **$7,400** (comparing median salaries).

However, for the first time in ECAR workforce research history, female CIOs and managers outearn their male counterparts (by $2,400 and $3,000, respectively).

**What strategies can create a more diverse workforce?**

**Equity:** Create opportunities where underrepresented groups can (and want to) participate in the workforce.

**Inclusion:** Actively and intentionally engage in ongoing efforts to diversify the workforce.
<table>
<thead>
<tr>
<th>Business Unit Descr</th>
<th>Ethnic</th>
<th>Female</th>
<th>Male</th>
<th>Other</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information Technology Serv.</td>
<td>~</td>
<td>1</td>
<td>12</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>Asian</td>
<td>37</td>
<td>93</td>
<td>1</td>
<td>131</td>
</tr>
<tr>
<td></td>
<td>Maori</td>
<td>5</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>No Response</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other Minority</td>
<td>5</td>
<td>12</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td></td>
<td>Pacific Islands</td>
<td>3</td>
<td>3</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Pakeha/European</td>
<td>30</td>
<td>97</td>
<td>1</td>
<td>128</td>
</tr>
<tr>
<td>Information Technology Serv. Total</td>
<td>76</td>
<td>223</td>
<td>2</td>
<td></td>
<td>301</td>
</tr>
<tr>
<td>IT Strategy, Policy &amp; Planning</td>
<td>Asian</td>
<td>1</td>
<td>5</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Maori</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Other Minority</td>
<td>2</td>
<td>1</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Pakeha/European</td>
<td>2</td>
<td>8</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>IT Strategy, Policy &amp; Planning Total</td>
<td>6</td>
<td>14</td>
<td>2</td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>Grand Total</td>
<td>82</td>
<td>237</td>
<td>2</td>
<td></td>
<td>321</td>
</tr>
</tbody>
</table>
The NZ National Advisory Council for the Employment of Women states:

“It’s vital for New Zealand’s economic future that women participate fully in innovation”
Gender diversity brings high performance teams and a high performing business.

Australia’s economic success depends on making the most of the country’s human capital, (which includes women).

Andrew Stevens, previous managing director for IBM Australia and New Zealand
“If we don’t innovate successfully we’re toast”

Higher Education is last in the percentage of digital "top performers" across the 13 main industries that the Gartner survey tracks
IT HAS A GENDER BALANCE PROBLEM

Gender Breakdown in Companies Globally
Percentage of Women by Corporate Function

- Customer Service: 62%
- HR: 61%
- Communications: 58%
- Marketing: 49%
- IT: 31%
- Engineering: 28%

n = 2,238.
Source: CEB Q3 2016 Global Labor Market Survey.
Deloitte Global: By the end of 2016 fewer than 25% of IT jobs in developed countries will be held by women.

Figure 1: Women as percentage of total IT workforce by country for US, Sweden, Canada and UK

Source: The statistics for the chart above were obtained from government websites or documents. The US data is for 2014, Sweden data is for 2013, Canada data is 2011 and UK data is for April-June 2015. See endnotes for information on sources.
Universities

26%
NZ Statistics

Sex of people working in IT occupations in New Zealand, 2013, %

TAGS: Females IT Jobs Males Occupations Technology

Contributor: Amy Hooper
Source: Statistics New Zealand

http://wikinewzealand.org/?graph=000601
Higher Ed CIOs

CAUDIT CIOs/IT Directors
Australia

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female representatives</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>11</td>
<td>10</td>
<td>10</td>
<td>9</td>
<td>11</td>
<td>8</td>
</tr>
<tr>
<td>Male representatives</td>
<td>41</td>
<td>40</td>
<td>38</td>
<td>37</td>
<td>39</td>
<td>39</td>
<td>40</td>
<td>38</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>49</td>
<td>49</td>
<td>49</td>
<td>49</td>
<td>49</td>
</tr>
<tr>
<td>% Female</td>
<td>15%</td>
<td>17%</td>
<td>21%</td>
<td>23%</td>
<td>20%</td>
<td>20%</td>
<td>18%</td>
<td>22%</td>
<td>16%</td>
</tr>
<tr>
<td>% Male</td>
<td>85%</td>
<td>83%</td>
<td>79%</td>
<td>77%</td>
<td>80%</td>
<td>80%</td>
<td>82%</td>
<td>78%</td>
<td>84%</td>
</tr>
</tbody>
</table>

NZ: 1 in 7
UK: 15% - 21 out of 140 CIOs/Directors of IT are women
Canada: 15 female CIO’s of a total of 60 institutions or 25%. 8% growth since 2006.
South Africa: 1 out of 26 (4%)
Study by ACS & Deloittes

• The gender pay gap in ICT stands at 20%, significantly lower than the workforce average of 34%

• 47% of all workers who studied ICT are now in other professions, such as advertising, marketing or accounting
**ICT Job shortfall**

- 10,000 shortfall of skilled IT staff over the next 3 years.
- Tertiary system produces 2,000 computer science graduates each year
- Projected gap of more than 100,000 ICT workers in the next five years
- Graduates with ICT qualifications has declined significantly since the early 2000s.

**Europe: 800,000 shortfall by 2020**
So how does having more women support innovation and benefit your organisation?
The Research

Increase women, increase ROI.

Fortune 500 companies that had at least three women directors saw:

- Return on invested capital increase by at least: 66%
- Return on sales increase by at least: 42%
- Average return on equity increase by at least: 53%

For better results, add women

Teams that have at least one female outperform all male groups in collective intelligence tests.

Diversity powers innovation.

The London Business School surveyed over 850 individuals on more than 100 teams across a variety of industries operating in 17 countries, studying the effect of women on knowledge transfer, experimentation, and task performance.

**US Patents by mixed-gender teams are cited more often**
In 2012, NCWIT citation rates on patents from mixed gender teams were 30-40% higher than the norm for patents of similar age and type.

Innovation By Design: The Case for Investing in Women
Anita Borg Institute Women Transforming Technology
So what are the issues?
What influences girls to do ICT?

- Parents – particularly Mothers
- Role models; Family and Parental roles
- Encouraging Mentoring relationships (a teacher)
- “Middle School is a critical period for girls interested in IT”
- Positive and non-aggressive environment
  - A classroom environment more welcoming to girls
- Exposure to IT: “natural” attraction to computers

(Gorbacheva et al, 2014; Allisson and Cossette, 2007; Bravo et al, 2003)
What else...

- Not seen as an attractive career option by girls

- “Persistent and long-held negative perceptions of predominantly male [IT] professionals engaged in desk-bound, repetitive, isolating jobs”
  - The Australian Workforce and Productivity Agency (2013)

- Significantly more male graduates than female graduates

- “Recruitment and retention of women in IT is particularly challenging”
  (Truth et al. 2009)
Quit Rates

Female Quit Rates Across SET

<table>
<thead>
<tr>
<th>Field</th>
<th>Women who quit</th>
<th>Women who stayed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Science</td>
<td>47%</td>
<td></td>
</tr>
<tr>
<td>Engineering</td>
<td>39%</td>
<td></td>
</tr>
<tr>
<td>Technology</td>
<td>56%</td>
<td></td>
</tr>
</tbody>
</table>

Each figure represents 10% of the total

Used by NCWIT with permission from "The Athena Factor: Reversing the Brain Drain in Science, Engineering, and Technology" by Sylvia Ann Hewlett, et al. © 2008 by Harvard Business Publishing; all rights reserved.
Intervening at the Fight-or-Flight Moment

220,000 highly qualified women would return to the labor market.

Current % of qualified female scientists, engineers, and technologists working in their fields

Projected % if attrition were reduced through interventions

Used by NCWIT with permission from "The Athena Factor: Reversing the Brain Drain in Science, Engineering, and Technology" by Sylvia Ann Hewlett, et al. © 2008 by Harvard Business Publishing; all rights reserved.
Why Women Leave

• **Unconscious Bias**: pre-existing beliefs and attitudes subtly influence behaviors and decisions.

• **Isolation**: Lack of role models/mentors/sponsors

• **Supervisory Relationships**: Employees leave managers, not companies

• **Promotion Processes**: Bias in task assignment, performance evaluation, and advancement

• **Competing Life Responsibilities**: Consequences for ALL employees but especially women
So what can we do about it?
Australian Initiatives

• State Based Women in IT organisations
• ACS
  – providing education to women in ICT
  – The Go Girl, Go for IT event is run in Victoria
  – Changing school girls' perspectives on ICT
  – Visiting schools
  – Rail Girls
• Mentoring
• Champagne & Coding
• Coding for Girls
NZ Initiatives

http://women.govt.nz/nacew/information/women-innovation.tech-groups-nz

- NZTech
  - Women’s Tech Exec Lunches
  - Summer of Tech
- The Mind Lab
- Programming Challenge 4 Girls
- Geek Girls
- Rails Girls
- Nanogirl
- Visiting Schools
- IT in Schools

Upcoming Events

- **DigiGirlz**
  - May 6 @ 9:30 AM - 3:30 PM
  - Auckland

- **Westpac Women in Tech presents TechGirl**
  - May 9 @ 9:30 AM - 2:30 PM
  - Auckland

- **Women in Tech Leadership Breakfast**
  - May 10 @ 7:00 AM - 8:30 PM
  - Lower Hutt

- **Breaking Stereotypes | Inspiring Christchurch Women in Tech**
  - May 11 @ 5:30 PM - 7:30 PM

- **Robotics with Robogals**
  - May 13 @ 10:30 AM - 12:30 PM
  - Auckland
Agile
Multi-disciplinary Teams

Ninja Teams Are Inspired by Spotify

16/05/2017
Interventions

- Recruitment/Selection
- Top Leadership Support/Institutional Accountability
- Emphasis on Supervisory Relationships
- Support for Competing Responsibilities
- Mentoring and Professional Development
- Performance and Promotion Processes
- Subtle Biases/Barriers
Unconscious Bias

This Jen, is THE INTERNET.
REPRESENTATION OF WOMEN IS A GLOBAL CONCERN

“I see value in gender-diversity initiatives and believe organizations have a role to play in increasing diversity”
Percentage of Global Executives Who Agree

90% Agree

n = 1421 global executives.

Government backs “name-blind CVs” to end discrimination
Personnel Today 26 October 2015

Numbers of women in UK boardrooms still low
The Guardian 7 July 2016
Reducing Unconscious Bias
Recruitment & Selection

1. Attract diverse talent by:
   - Advertising in a variety of venues
   - Listing desired criteria as “preferred” instead of “required”
   - Looking for different combinations of candidate strengths
   - Accepting a wide range of educational background
   - Looking for functional diversity

2. Check for biased wording:
   - in job announcements
   - in interview questions
   - in candidate evaluation tools
   - when claiming cultural “fit” or lack of “fit”

3. Track demographics for:
   - applicants
   - hires

4. Create awareness about bias.
   - Provide visible examples of successful and diverse figures.
   - Assess your own unconscious bias and encourage your team to assess their own biases.
   - Conduct an internal resume bias test.
   - Educate hiring managers and other employees about unconscious bias.
Yassmin Abdel-Magied: What does my headscarf mean to you?

https://www.ted.com/talks/yassmin_abdel_magied_what_does_my_headscarf_mean_to_you
Questions

• Why treat women differently?
• We are above the average? Isn’t that good enough?
• There aren’t enough people in the pool to pull from anyway.
• Where are the “Men in IT” events?
• What about other diversity?
Male Advocacy

8 Ways to Increase Male Advocacy

1. Recreate “temporary” minority experiences for men.

2. Ensure that male employees have experiences with female mentors, bosses, or other female leaders.

3. Invite men to “women in tech” events, workshops on unconscious biases, or diversity trainings.

4. Share “your story” of being a minority in a male-dominated environment with male colleagues you trust.
8 Ways to Increase Male Advocacy (contd)

5. Give male colleagues a specific role in gender diversity efforts.

6. Provide men with information to raise awareness and make change.

7. Provide men with tools to use in gender diversity efforts.

8. Bring men together who care about the issues.

Diversity generally versus women in IT
Measure it

### CAUDIT CIOs/IT Directors

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td>48</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Female</td>
<td>15%</td>
<td>17%</td>
<td>21%</td>
<td>23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Male</td>
<td>85%</td>
<td>83%</td>
<td>79%</td>
<td>77%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ethnic</th>
<th>Female</th>
<th>Male</th>
<th>Other</th>
<th>Grand Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>~</td>
<td>1</td>
<td>12</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>Asian</td>
<td>37</td>
<td>93</td>
<td>1</td>
<td>131</td>
</tr>
<tr>
<td>Maori</td>
<td>5</td>
<td>5</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>No Response</td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minority</td>
<td>5</td>
<td>12</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Pacific</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Islands</td>
<td>3</td>
<td>3</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>Pakeha/Eur</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>opean</td>
<td>30</td>
<td>97</td>
<td>1</td>
<td>128</td>
</tr>
</tbody>
</table>

| Information Technology Serv. Total | 76 | 223 | 2 | 301 |
| IT Strategy, Policy & Planning    |    |     |   |     |
| Asian                              | 1  | 5   |   | 6   |
| Maori                             | 1  | 1   |   | 1   |
| Other Minority                    | 2  | 1   |   | 3   |
| Pakeha/European                    | 2  | 8   |   | 10  |
| IT Strategy, Policy & Planning Total| 6  | 14  |   | 20  |
| Grand Total                        | 82 | 237 | 2 | 321 |

NZ: 1 in 7
UK: 15% - 21 out of 140 CIOs
Canada: 15 female CIO’s of a total 8% growth since 2006.
South Africa: 1 out of 26 (4%)
“If your aim is nothing, you'll hit it every time. You always have to have a goal and be working towards a goal.”

~ Helen Clark

Head of UN Development Programme
(Former NZ PM & voted most inspirational Kiwi woman)