**Project Objectives**

**Introduction**

**Aim**
To measure and understand the current state as well as the future evolution of the ICT manpower landscape in Malaysia

- **Demand-Side Analysis**
- **Supply-Side Analysis**
- **Gap Identification**
- **Gap Bridging Strategies**
ICT industry has evolved into two major segments – Core ICT and ITES as depicted above.
Demand Analysis - Overall
By Skill Sets

ICT Demand Projection

2009 Skill Level Split

- Strong growth expected over the forecast period as economic recovery sets in
- Software Development and Networking & Security top skill areas
## Demand Analysis - Overall

### Snapshot of Demand

### ICT Employee Strength by Skill Categories

<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Development</td>
<td>88,799</td>
<td>91,410</td>
<td>115,210</td>
<td>23,800</td>
<td>8.0%</td>
</tr>
<tr>
<td>Networking &amp; Security</td>
<td>48,671</td>
<td>47,174</td>
<td>67,659</td>
<td>20,485</td>
<td>12.8%</td>
</tr>
<tr>
<td>Database</td>
<td>25,757</td>
<td>27,432</td>
<td>37,573</td>
<td>10,141</td>
<td>11.1%</td>
</tr>
<tr>
<td>OS &amp; Server</td>
<td>28,743</td>
<td>27,339</td>
<td>32,784</td>
<td>5,445</td>
<td>6.2%</td>
</tr>
<tr>
<td>BI &amp; Analytics</td>
<td>4,407</td>
<td>5,233</td>
<td>6,787</td>
<td>1,554</td>
<td>9.1%</td>
</tr>
<tr>
<td>SAP</td>
<td>8,838</td>
<td>11,643</td>
<td>16,144</td>
<td>4,502</td>
<td>11.5%</td>
</tr>
<tr>
<td>Hardware Design</td>
<td>7,704</td>
<td>5,730</td>
<td>6,775</td>
<td>1,045</td>
<td>5.7%</td>
</tr>
<tr>
<td>Multimedia Tools</td>
<td>7,409</td>
<td>7,318</td>
<td>10,771</td>
<td>3,453</td>
<td>13.8%</td>
</tr>
</tbody>
</table>
Demand Analysis - MSC Companies

Company Demographics

Pretty even split between the job roles with Maintenance & Support leading at around 25% of the total employees

ICT Employees account for more than half of the current employees at MSC companies

Core Employee Role

ICT 56%
Non ICT 44%

Job Roles

Maintenance & Support 23%
Implementation 18%
Research & Design 19%
Development & Testing 20%
ICT Management 20%
Research & Design 19%
Implementation 18%
Development & Testing 20%
ICT Management 20%
Maintenance & Support 23%
ICT Manpower Profile

**Years of Experience**

- More than 5 years: 13%
- Between 2 and 5 years: 32%
- Between 0 and 2 years: 34%
- No experience: 20%

- Almost half of ICT workforce > 2 years work experience
- Typically degree and above qualification in a ‘Core’ ICT discipline
- Interestingly, 6% of ICT employees hail from non-ICT related disciplines

**Level of Qualification**

- Bachelors: 67%
- Diploma: 22%
- SPM: 1%
- Postgraduate: 10%

**Discipline of Study**

- Core ICT Courses: 86%
- Business Studies, Other Engineering, Mathematics, Science (EE, Physics etc): 8%
- Others: 3%
- Other: 3%
Even in the face of the tough economic climate, majority of MSC companies increased ICT workforce over 2008.
Outsourcing a common thread among companies that decreased manpower, as they look for ways to streamline business processes and cut costs.

'Small' = Annual Turnover less than RM 5 million. 'Large' = Annual Turnover greater than RM 100 million.
Demand Analysis - MSC Companies

By Skill Sets

ICT Demand Projection

2009 Skill Level Split

MSC to outperform overall industry in recruitment of ICT workforce over forecast period

Software Development and Networking & Security top skill areas
While showing positive growth, Non-MSC companies to lag MSC companies in terms of ICT workforce growth over the forecast period.
Software Development and Networking & Security top skill areas.
Demand Analysis - MSC vs. Non-MSC
Key Comparisons from Survey Analysis

Core Employee Role

Proliferation of ICT employees in MSC companies since ICT is a core business activity for them

ICT serves a support role for most Non-MSC companies where core business activities are non-ICT related (Logistics, BFSI, Manufacturing etc)

- MSC
  - Core Employee Role
    - ICT 56%
    - Non ICT 44%

- Non-MSC
  - Core Employee Role
    - ICT 7%
    - Non ICT 93%
Proportion of employees with Degree & Above qualifications is much higher for MSC companies, indicative of the more specialized and qualified requirements for ICT roles in MSC companies vis-à-vis in Non-MSC companies.
Demand Analysis - MSC vs. Non-MSC

Key Comparisons from Survey Analysis

Change in ICT Manpower (Jan08-Dec08)

MSC

- Increase 69%
- Decrease 31%

Non-MSC

- Increase 37%
- Decrease 63%

Telling manifestation of the strategic role that ICT plays in MSC companies. Non-MSC companies are more willing to allow hiring freezes or shrinkages in ICT workforce in these testing times.
Supply Side Analysis – Student Demographics
Profile of Students at surveyed institutes

Courses Enrolled
- ICT Courses 10.5%
- Non-ICT courses 89.5%

Total Enrolment at Respondent IHLs: 320,000

10% of total students across disciplines currently enrolled in ICT courses

Level of qualification
- Undergraduate 56%
- Diploma 33%
- Certificate 2%
- Postgraduate 9%

65% of the current ICT students enrolled in Degree & Above courses
Supply Side Analysis – Student Demographics
Profile of Students at surveyed institutes

Local vs. Foreign students

Foreign 20%
Local 80%

A significant 20% of the current ICT cohort is from outside Malaysia

Discipline of Study

Information Technology 39%
Computer Science 24%
Computer Engineering 5%
Multimedia Skills 10%
Others 22%

‘Others’ include such programs as Games Design, e-Commerce/Information Systems, Bio-informatics etc.
Given the dynamic and evolving nature of the ICT industry, it is disappointing to note that 38% of surveyed IHLs review their ICT curricula in more than 2 years. IHLs with a review cycle of 6 months were mostly private institutes.
Stakeholders involved during curriculum review

<table>
<thead>
<tr>
<th>Stakeholder Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry players</td>
<td>23%</td>
</tr>
<tr>
<td>Industry associations</td>
<td>44%</td>
</tr>
<tr>
<td>Government agencies</td>
<td>87%</td>
</tr>
</tbody>
</table>

Low interaction with Industry players when reviewing ICT curricula would seemingly explain the perceived gap between industry expectation and graduates’ competence.
Supply Side Analysis – Supply Projections

Overall

ICT Graduates Projection

<table>
<thead>
<tr>
<th>Year</th>
<th>Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>27,428</td>
</tr>
<tr>
<td>2009</td>
<td>28,844</td>
</tr>
<tr>
<td>2010</td>
<td>33,983</td>
</tr>
<tr>
<td>2011</td>
<td>40,037</td>
</tr>
<tr>
<td>2012</td>
<td>47,169</td>
</tr>
</tbody>
</table>

CAGR 17.8%

2009 Skill Level Split

- Creative Multimedia: 18%
- Software Development: 26%
- Hardware Design: 12%
- Networking & Security: 17%
- Database: 5%
- OS & Server: 5%
- BI & Analytics: 6%
- SAP: 2%
- Others: 9%

Aggressive plans to increase ICT student intake over the forecast period cited by respondent IHLs

Projections based on input provided by respondent IHLs on their plans to increase intake over the forecast period
Gap Analysis
Types of Gap

Using the demand side and supply side analysis, we can identify gaps across 2 buckets – 1) In the manpower number required to meet the local demand for ICT human capital, and 2) the employability or employer satisfaction of the current ICT manpower.

**Gap in Manpower Demand & Supply**
1. What is the shortfall of manpower required to meet the demand?
2. Which skill areas are expected to face a manpower crunch in the next 3 years?

**Gap in Employer Satisfaction of ICT Manpower**
1. Which skill areas are falling short on employee satisfaction hence requiring more focus on quality of manpower and degree of qualification?
Gap Analysis
Shortfall of Manpower – Overall (Scenario 1)

Overall Manpower Shortfall

**Scenario 1**
Supply includes ALL ICT graduates and forecasted based on growth estimates provided by the respondent IHLs
Gap Analysis

Shortfall of Manpower – Overall (Scenario 2)

Overall Manpower Shortfall

2009 Incremental Demand

MSC 67%
Non-MSC 33%

2012 Incremental Demand

MSC 44%
Non-MSC 56%

Demand for the year 2009 2012
2,950 29,957

Supply for the year
26,152

Gap
22,663 2,950

Note: Gap = Supply - Demand

Scenario 2

Supply includes ALL ICT graduates and forecasted based on historical growth of ICT graduates from local IHLs over 2005-2007
**Gap Analysis**

*Shortfall of Manpower – Overall (Scenario 3)*

**Overall Manpower Shortfall**

- **2009 Incremental Demand**
  - MSC: 67%
  - Non-MSC: 33%

- **2012 Incremental Demand**
  - MSC: 44%
  - Non-MSC: 56%

**Demand for the year**

- **2009**: 17,000
- **2012**: 19,472

**Supply (Degree & above) for the year**

- **2009**: 2,950
- **2012**: 22,663

**Gap**

- **2009**: 14,050
- **2012**: 3,191

**Note**: Gap = Supply - Demand

**Scenario 3**

Supply includes ICT students graduating with at least Degree and forecasted based on historical growth of ICT graduates from local IHLs over 2005-2007.
Gap Analysis
Shortfall of Manpower – Overall (Scenario 4)

**Employability ~60%**

**Overall Manpower Shortfall**

2009 Incremental Demand

<table>
<thead>
<tr>
<th>MSC</th>
<th>Non-MSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>67%</td>
<td>33%</td>
</tr>
</tbody>
</table>

2012 Incremental Demand

<table>
<thead>
<tr>
<th>MSC</th>
<th>Non-MSC</th>
</tr>
</thead>
<tbody>
<tr>
<td>44%</td>
<td>56%</td>
</tr>
</tbody>
</table>

**2009 Incremental Demand**

<table>
<thead>
<tr>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>10,200</td>
<td>7,250</td>
</tr>
</tbody>
</table>

**2012 Incremental Demand**

<table>
<thead>
<tr>
<th>Demand</th>
<th>Supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>22,663</td>
<td>13,598</td>
</tr>
</tbody>
</table>

**Note: Gap = Supply - Demand**

**Scenario 4**
Supply includes ICT students graduating with at least Degree, forecasted based on historical growth of ICT graduates over 2005-2007, and modified to factor in employability
**Gap Analysis**

*Employer Satisfaction with ICT Employee Skills*

**Employer Satisfaction Gaps by ICT Skill Categories**

<table>
<thead>
<tr>
<th>Skill Category</th>
<th>Rating</th>
<th>Gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Development</td>
<td>3.9</td>
<td>0.1</td>
</tr>
<tr>
<td>Networking &amp; Security</td>
<td>3.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Database</td>
<td>3.1</td>
<td>0.9</td>
</tr>
<tr>
<td>OS &amp; Server</td>
<td>3.4</td>
<td>0.6</td>
</tr>
<tr>
<td>BI &amp; Analytics</td>
<td>3.0</td>
<td>1.0</td>
</tr>
<tr>
<td>SAP</td>
<td>2.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Hardware Design</td>
<td>2.9</td>
<td>1.1</td>
</tr>
<tr>
<td>Creative Multimedia</td>
<td>3.0</td>
<td>1.0</td>
</tr>
</tbody>
</table>

Unemployable Poor  Acceptable  Desired  Excellent
MSC Analysis
Total Employees – ICT + ITES employees

In the light of the tough economic climate over the last year, the MSC cluster performed impressively, creating 6,741 fresh jobs over 2008-2009. As the economy recovers, the MSC growth story is poised to continue.
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### Demand Analysis – MSC Companies

#### Snapshot of Demand

#### ICT Employee Strength by Skill Categories

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<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Software Development</td>
<td>32,553</td>
<td>30,006</td>
<td>41,037</td>
<td>11,031</td>
<td>11.0%</td>
</tr>
<tr>
<td>Networking &amp; Security</td>
<td>16,772</td>
<td>18,046</td>
<td>26,736</td>
<td>8,690</td>
<td>14.0%</td>
</tr>
<tr>
<td>Database</td>
<td>6,813</td>
<td>10,069</td>
<td>14,146</td>
<td>4,077</td>
<td>12.0%</td>
</tr>
<tr>
<td>OS &amp; Server</td>
<td>2,573</td>
<td>2,147</td>
<td>2,781</td>
<td>634</td>
<td>9.0%</td>
</tr>
<tr>
<td>BI &amp; Analytics</td>
<td>631</td>
<td>808</td>
<td>1,135</td>
<td>327</td>
<td>12.0%</td>
</tr>
<tr>
<td>SAP</td>
<td>506</td>
<td>1,112</td>
<td>1,782</td>
<td>669</td>
<td>17.0%</td>
</tr>
<tr>
<td>Hardware Design</td>
<td>3,082</td>
<td>2,817</td>
<td>3,451</td>
<td>634</td>
<td>7.0%</td>
</tr>
<tr>
<td>Multimedia Tools</td>
<td>964</td>
<td>877</td>
<td>1,477</td>
<td>601</td>
<td>19.0%</td>
</tr>
<tr>
<td>IT-Enabled Services</td>
<td>23,769</td>
<td>28,523</td>
<td>51,793</td>
<td>23,270</td>
<td>22.0%</td>
</tr>
</tbody>
</table>
Key Takeaways

1. Certain scenarios for the demand and supply situation in Malaysia bring up an over-supply of ICT graduates. This over-supply however should be considered in the light of the fact that employers deem graduates from local IHLs to be lacking in quality and not all employable.

2. Curricula in local IHLs are perceived by employers to not be aligned with the requirements of the industry.

3. As ICT is transcending its role from just a support function to a business enabler, there is an increasing and as yet unmet demand for ICT graduates that are well-equipped in business/communication skills.

4. The MSC cluster has performed impressively in the light of the tough economic times over the last year, with SSO as the chief growth engine.

5. The MSC cluster is poised to add 50,000 new knowledge workers over the next three years (2010-2012).