Nurturing Industry-Ready Graduate
to Out-Innovate the Competition

3rd ASEM UNIVERSITY-BUSINESS FORUM
PUTRA WORLD TRADE CENTRE (PWTC), KUALA LUMPUR
5-6 NOVEMBER 2012
Executive Summary

✓ Ensuring a sustainable talent pool for the industry is critical to ensure new and innovative products can be developed to satisfy the demanding and fast changing customer needs.

✓ It is putting much strain to the industry and academia ensuring talents are ready to contribute positively to the development of new products that will excite the consumer.

✓ A change in learning method through experiential learning and solving industry-driven problems in combination to industry-specific subject will close the gap of the education acquired by the undergraduates and the required competencies to make them industry-ready.

✓ Examples from successful industry-university collaboration in nurturing industry-ready graduates will be shared and ideas to further improve the existing collaboration and industry-guided curriculum will be introduced.
Vision for Malaysia’s E&E sector in 2020

“Malaysia in the year 2020 aims to be a strategic electronics and electrical center for leading global E&E players and domestic champions, offering high value for money and with a deep pool of talent. We will emphasize “design and development” as well as “high-complexity manufacturing” and build leading edge capabilities in the area of ecologically sustainable technologies.”

Pemandu’s Electronics & Electrical Lab 2010
Opportunities in Growth & Emerging Clusters

Semiconductor & Embedded

Industrial Electronics

Optoelectronics & SSL

Solar

2020 GNI impact: US$16.9B; 157,000 Jobs
Funding: US$3.7B (Public); US$20.6B (Private)
Regional Opportunities to Grow E&E Sector

Northern Corridor
- Deepen strengths in semicon and industrial electronics
- Build solar cell mfg and LED clusters

Klang Valley
- Continue to emphasise HQ, design, support services

Southern Corridor
- Manufacturing & logistics hub for heavy goods e.g. solar module assembly
- Strengthen partnership with Singapore to leverage proximity

Sarawak
- Build into key silicon substrate manufacturing site

Targeted Clusters
- IC Design
- Embedded Systems
- LED/SSL
- Solar
- RF & Wireless
- M&E
- Test & Measurement
- Audio / Video

Strengthening Existing Regional Strength in all E&E Sectors and Enhance Clusters
500,000 employed in the E&E sector, contributed to ~ 40% of the countries exports

How we continue accelerate R&D growth in the E&E sector?

Leverage on the past

Enhance the present

Shape the future
Can we take the curve at a higher speed?
E&E Sectoral Working Group

E&E Talent Corp
Sectoral Working Group

1. Articulate talent challenges
   - Attracting
   - Nurturing
   - Retaining

2. Develop concrete proposals on solutions

3. Implement solutions

Develop Industry-led Solutions to E&E Sector’s Talent Requirements

Launched 24th April, 2011
<table>
<thead>
<tr>
<th>Issues</th>
<th>Why? What are the possible causes to the issues?</th>
</tr>
</thead>
</table>
| University graduates not "Plug-n-Play" | • Not enough industrial training - too short  
• Curriculum not align to industrial needs  
• Teaching methodology not equip to expose to industrial |
| Lack of "quality" engineer    |                                                 |
| Variety of internship, EAP programs |                                              |
| Lecturer lack of exposure in industrial experience |                                          |
Shortage of Engineer:
Need to match developed nation (1:100)

5-20% mobility of top talents due to shortage of qualified talents

12-18 months training of fresh graduate before "industry-ready"

Impact on future FDI and SME unless addressed at sector level
Interventions identified to close gap between Industry Needs and Graduates Competency

**FasTrack**

Post-graduation Apprenticeship to nurture “Industry-Ready Graduate”

**Extended internship** program for Year 3 and 4 students

Industry-based post-graduate programs and incentives; leveraging Ind. MSc/PhD, USM EDSE

Platform for industry- academic collaboration
## Need for R&D engineers

E&E sector is moving up the value chain and in need of more competent R&D engineers

- Current graduates need time to be productive as competent R&D engineers
- Modularized competency based industrial training necessary to accelerate learning

Industry members are committed in nurturing local talent!

## FasTrack programme developed

FasTrack program designed by industry, developed with PSDC based on the CODE8 program introduced by MIMOS & MOHE to meet immediate needs

- Technical & Behavioral Modification curriculum with competency based assessment.
- Apprentices will be coached & mentored on real life projects at host companies

End in mind, FasTrack adoption into university curriculum to ensure competency of future graduates!
Modeled after MoHE & MIMOS
Developed into FasTrack at PSDC

✓ Psychometric Based Selection
✓ Domain & Behavioral Competency Based Training
✓ Competency & Performance Management
✓ On-the-Job Training

Job Placement & Marketability

2011 Batch: 101 apprentices, 5 companies
2012 Batch: 130+ apprentices, 7 companies
Early exposure to real work environments for a smooth transition to industry

**Apprenticeship**

- 6-12 months attachment
- Cluster based
- Competency based learning – technical, soft skills, behavioral skills
- Real R&D project
- Competency & performance assessment
- Employment opportunity with host company

**FasTrack**

1st batch of 101 Graduated in June 2012. 90+% have been placed in companies. The rest is still in progress.

Next batch (FasTrack2):
Target is 150 students.

Other programs:
- HIT-RSE
- BIDP
- TessDE
- GEMS

**Congratulations to 2011-2012 FasTrack Engineers**

FasTrack 1 Graduation - 9 June, 2012
What we need to incorporate FasTrack into the curriculum?

Up-skilling programs like FasTrack is closing gap between graduates’ competency and industry needs, BUT not sustainable!!!

RM 30k – RM 80k per pax / year

Need to incorporate industry-based experiential learning & curriculum back to university!!!

<table>
<thead>
<tr>
<th>Program Types</th>
<th>On-job-training (OJT)</th>
<th>Technical Development</th>
<th>Personal Development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Objectives</td>
<td>Provide exposure at multiple engineering scopes</td>
<td>Accelerate entry level capability and technical breadth</td>
<td>Assimilate into complex working environment</td>
</tr>
<tr>
<td>Fields / Modules</td>
<td>Hardware: * 3 mth product support + 3 mth SW Testing + 6 mth product design</td>
<td>Team: * EE: basic VCO, Antenna, Radio Design</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Software: * Team: * EE: basic software overview, Testing Processes, Trunking</td>
<td>* SW: Basic Software overview, Testing Processes, Trunking</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>* ME: Mechanical Engg. Development process, Plastic, Sheet Metal, FEA</td>
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</tbody>
</table>

Expand 12-months FasTrack program to Yr3 and Yr4 curriculum

Leverage on MoHE HEIGIP Framework
Partnering for Talent

- Attracting & Facilitating Foreign Talents
- Attracting Returning Malaysians
- Awareness of E&E Jobs
- Portfolio Outreach
- Student Outreach
- Ready4Work
- Collaterals

Malaysia as a global talent hub 2020

Our Vision
To be the Premier Industry-driven Centre for Collaboration in Research & Development, Talent Development and Commercialization for the Electrical & Electronics Industry to accelerate economic growth in Malaysia

- TalentXchange
- Structured Internship
- FasTrack
- Innovation & Design Competitions
- Professional Masters Program
- Curriculum Enhancement
- Lecturer Internship
- Domain Expert
Optimize Malaysian Talent
Enhance school-to-work transition

Early exposure to real work environments for a smooth transition to industry

LSB
Lawatan Sambil Belajar ‘Industry Insights’
- Year 1-3 students
- Industry Exposure
- Interview opportunity for internship placement
- Guidance to make informed decisions on career options aligned with industry needs

SIP
Structured Internship Program
- 3-6 months attachment
- Hands-on industry exposure
- Structured training
- Final Year Project (FYP) opportunity with host company
- Opportunity to participate in Innovate Malaysia competition under host company track
- Employment opportunity with host company

FYP
Final Year Project
- Actual industry project
- Support, coaching and guidance from university and industry
- Opportunity to participate in Innovate Malaysia competition under host company track
- Opportunity to participate in the National Research and Innovation Competition (NRIC)
- Employment opportunity

IRG
Industry Ready Graduate Apprenticeship
- 6-12 months attachment
- Cluster based
- Competency based learning – technical, soft skills, behavioral skills
- Real R&D project
- Competency & performance assessment
- Employment opportunity with host company
- RM3,000/month

MSc/PhD
Post-Grad Program MSc/Phd
- 12 – 24 months attachment
- Specialization Certification
- MSc/PhD project
- Employment opportunity with host company

Current Programs:
CREST-SIP (67 interns)

Current Progress:
Interns under the CREST-SIP program taking on actual industry projects assigned by host companies. Some have enrolled in the Innovate M’sia Competition

FasTrack Program
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Next batch (FasTrack2): Target is 150 students.

Other programs:
HIT-RSE
BIDP
TessDE
GEMS

MyBrain15 Ind. MSc/PhD, USM EDSE
Industry-Ready Graduate Program
Cluster-focused Internship, Apprenticeship, Adjunct & RA Program

(1) A consolidated program to introduce university students to the industry through Industry Visit, and exposed to real industry working environment during Internship and solving industry problems in Final Year Projects and Apprenticeship.

(2) Advancing knowledge as Research Assistant in Contract Research projects.

(3) Lecturer Internship and Sabbatical opportunities

(4) Adjunct Program and Curriculum Enhancement at universities

(5) Seeding of Industry Experts, Golden Talent and Latent Talent as coaches to the interns, apprentices, research assistants and project teams.
Industry-Ready Graduate Program
Cluster-focused Internship, Apprenticeship, Adjunct & RA Program

How do we move forward?
• Industry-Academic collaboration in specific clusters defined by industry i.e. i-CoE
• Adjunct Faculty
• Curriculum embedment
• Extended internship & final year projects
  • 12-18 months industry-based training and projects
• Lecturer internship and sabbatical
• Industry-based MSc and PhD projects
About CREST
Vision and Mission

Our Vision
To be the **Premier Industry-driven Centre** for Collaboration in Research & Development, Talent Development and Commercialization for the Electrical & Electronics Industry to accelerate economic growth in Malaysia.

Our Mission
To **advance scientific knowledge** in the Electrical & Electronics sector through collaborative basic and applied research between academia and industry, forming a centre of research excellence.
About CREST
3 Focus Areas

Research & Development

Talent Development

Commercialization
Where we are today

CREST officially incorporated on 30 June 2011

Launched on 9 June 2012

USM’s Science and Arts Innovation Space (SAINS)

CREST office located within 20km radius of at least 3000 researchers

10 companies have signed up to become Founder Members of CREST

• CREST has syndicated with key Federal Government Agencies
• Endorsed by the Economic Council
Thank You