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

CREST
COLLABORATIVE RESEARCH IN ENGINEERING, SCIENCE & TECHNOLOGY CENTER

TalentCorp
MALAYSIA

Nurturing Industry-Ready Graduate to Out-Innovate the Competition

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

PEMANDU

Performance Management & Delivery Unit
Prime Minister's Department

Opportunities in Growth & Emerging Clusters

Semiconductor & Embedded

Infineon, intel, ON Semiconductor, ALTERA, SILTERRA, RENESAS, AMD, Texas Instruments

Industrial Electronics

Agilent Technologies, clarion, National Instruments, AVAGO TECHNOLOGIES, MOTOROLA, IRIS, BOSE

Optoelectronics & SSL

NICHIA, OSRAM Opto Semiconductors, PHILIPS LUMILEDS, LEDZWORLD, ItraMAS

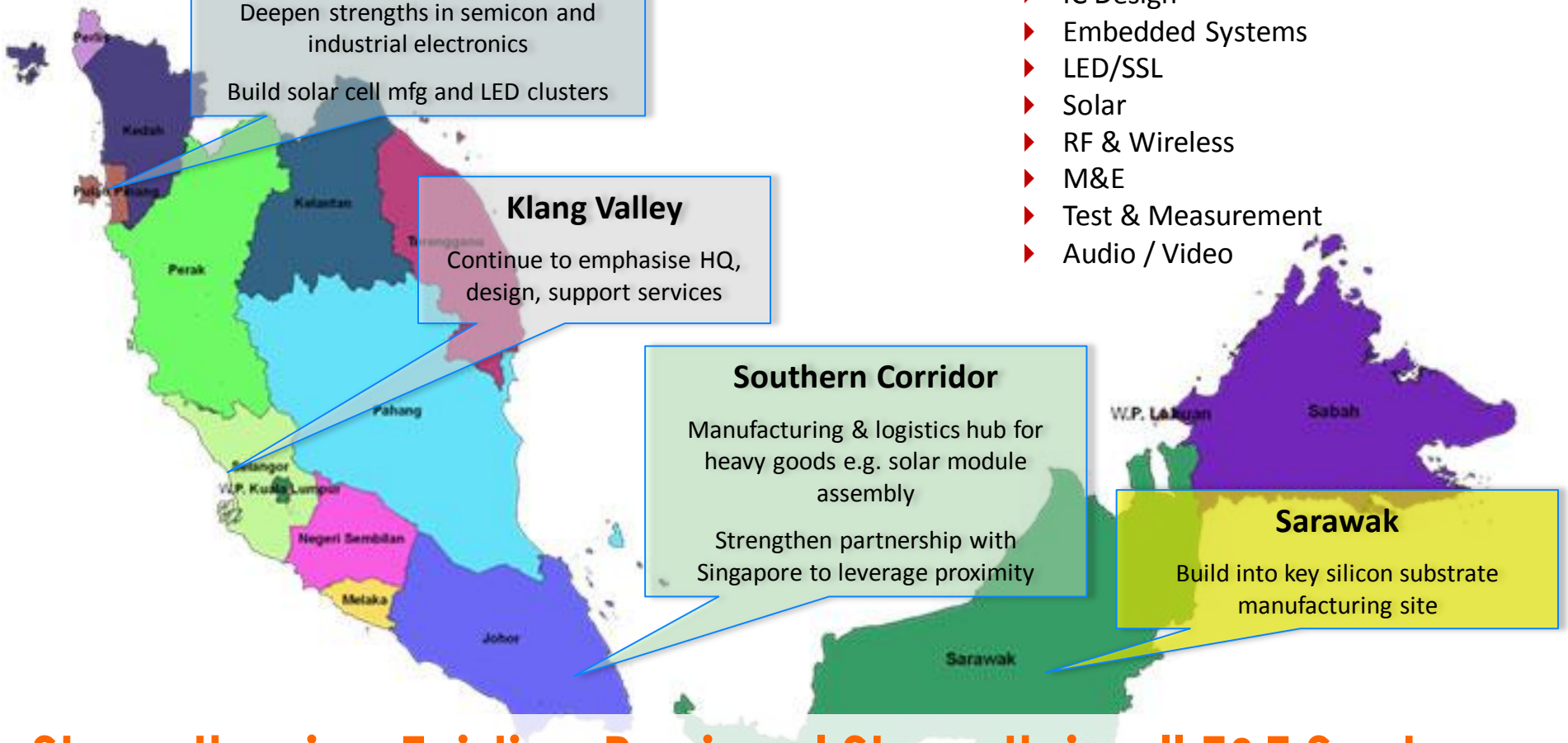
Solar

SUNPOWER, MEMC TECHNOLOGY IS BUILT ON US, Panasonic ideas for life, Q.CELLS, First Solar, BOSCH Invented for life ENERGY PRODUCTS

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



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?

Accelerating R&D Growth in the E&E Sector

Can we take the curve at a higher speed?

E&E Sectoral Working Group

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E&E Talent Corp
Sectoral Working Group

Launched 24th April, 2011

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

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E&E SECTOR WORKING GROUP

TALENT DEVELOPMENT NEEDS | 19 Nov, 2010

Issues	Why? What are the possible causes to the issues?
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 i industrial experience	

Medium to Long Term Solutions
Awareness in School (YE, intar)
Revise university curriculum to heet industry needs
Revise curriculum, and grading ystem to emphasize on practical nd internship training.
Review German Model - i.e. in Osram, Bosch, BBraun - and lign industry-academic rograms to specific industry equirements.
Industry attachment for lecturers, school teachers

	to drive university lectures participation.

University graduates not "Plug-n-Play"

Lack of "quality" engineer

Gaps to Nurture & Grow Industry-Ready Graduates

Variety of internship and Employee Education Program

Lecturer lack of exposure in industrial experience

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E&E SECTOR WORKING GROUP

TALENT DEVELOPMENT NEEDS | 19 Nov, 2010

Shortage of Engineer:

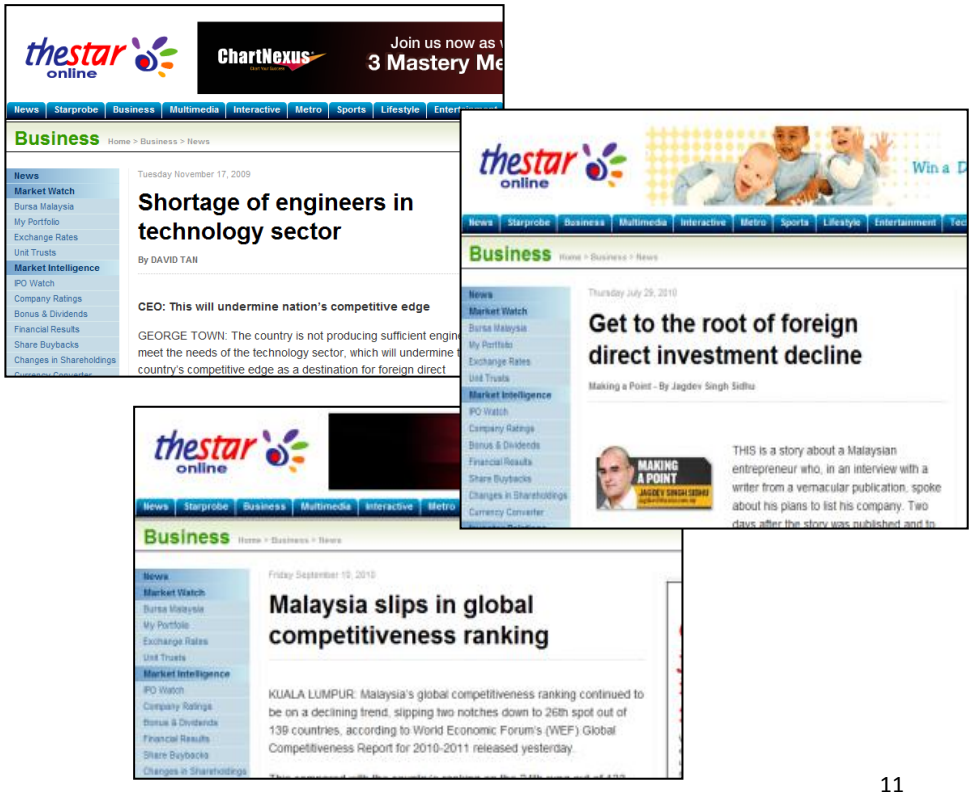
- Need to match developed nation (1:100)

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

	Country	Population	Estimated number of Engineers	Engineer – Population Ratio
	Japan	127 million	2.8 million	1:45
	Germany	82 million	1 million	1:82
	Canada	30 million	250,000	1:120
	U.K.	60 million	425,000	1:141
	Malaysia	25 million	80,000	1:312



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

MyBRAIN15
MENJANA MODAL INSAN BERPENGETAHUAN TINGGI

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

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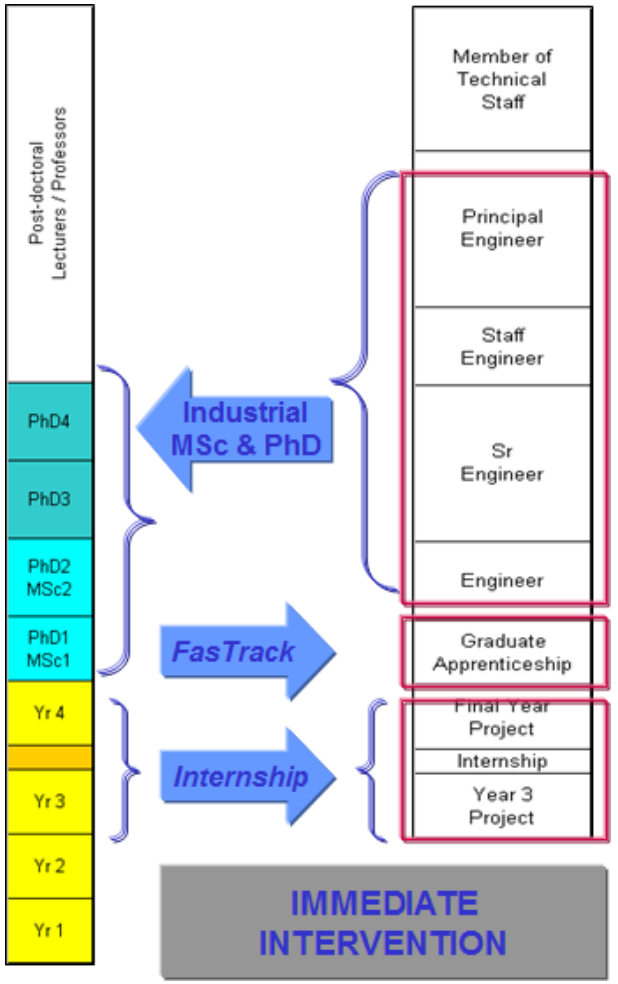
Platform for **industry- academic collaboration**



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Nurturing "Industry-Ready" Graduate

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 !

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E&E TALENT DEVELOPMENT PROGRAM
FasTrack – Towards Market Driven HCD

Modeled after MoHE & MIMOS

Developed into 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

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E&E TALENT DEVELOPMENT PROGRAM
FasTrack – Towards Market Driven HCD

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

Kher Yee works smart at Intel to impact businesses

Agilent is Lay Kim's cool choice to develop her career

Nasibah - Bringing safety to the fore front by ensuring performance in fragile environments

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!!!

Industry (examples)	E&E Cluster
MOTOROLA	RF & Wireless Communication
ALTERA, intel	Embedded Systems
SILTERRA	Wafer Technology
Agilent Technologies, NATIONAL INSTRUMENTS	Test & Measurement

Leverage on MoHE HEIGIP Framework

Program Types	On-job-training (OJT)	Technical Development	Personal Development
Objectives	Provide exposure at multiple engineering scopes	Accelerate entry level capability and technical breadth	Assimilate into complex working environment
Fields / Modules	**Hardware:** * 3 mth product design + 3 mth product & customer support + 3 mth Manufacturing **Software:** * 3 mth product & customer support + 3 mth SW Testing + 6 mth product design	**Examples:** * EE: Basic VCO, Antenna, Radio Design * SW: Basic software overview, Testing Processes, Trunking * ME: Mechanical Engin. Development process, Plastic, Sheet Metal, FEA	* Project Management, Problem Solving, Technical Report Writing, Change Mgmt * Team bonding

FasTrack

Spread over for 12 months

Expand 12-months FasTrack program to Yr3 and Yr 4 curriculum

"E&E HEIGIP"

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Partnering for Talent

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

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

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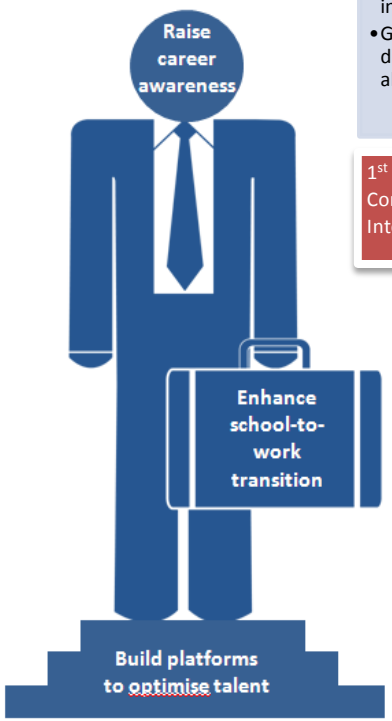
CREST COLLABORATIVE RESEARCH IN ENGINEERING, SCIENCE & TECHNOLOGY CENTER

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

1st Event held on 4-6 Oct'12
Companies visited – Agilent, Intel, Motorola & Silterra

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

Current Programs:
CREST-SIP (67 interns)

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FYP

Final Year Project

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

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

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

FasTrack Program
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

FasTrack
12-month Apprenticeship Program

MSc/PhD

Post-Grad Program
MSc/Phd

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

MyBrain15
Ind. MSc/PhD, USM EDSE

PSDC

Industry-Ready Graduate Program

Cluster-focused Internship, Apprenticeship, Adjunct & RA Program

IC Design	Embedded Systems	Opto-electronics & LED Solutions	Wafer Fab & IC Pkg	Audio/Video System	HW Design (EE, ME, ID)	Emerging Clusters
Altera	Altera	Avago	SilTerra	Bose	Agilent	Active Medical Devices, Medical Imaging
Intel	Agilent	Lumileds	Infineon	Bosch	Bose	
SilTerra	Bose	OSRAM Opto	On Semi	Clarion	Bosch	Life Sciences & Analytical Equipment
Fuji etc	Clarion	LEDZWorld	Fuji etc	Motorola Solutions	Clarion	
	Intel	ITRAMAS	ASE, Venture		Intel	
	Motorola Solutions				Motorola Solutions	
	National Instruments					

Internship, FYP
Graduate Trainee, Research Assistant,
R&D projects Requirements

USM, UTM, UM

UPM, UiTM, UniKL

MMU, UTAR, INTI

UniMAP, UMP, UTeM

Talent Providers

Matching
via
TalentXChange
Hire Interns,
Apprentices, RAs
Manage,
Coordinate, Train
Assess, Deploy

CREST Industry-Ready Graduate 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

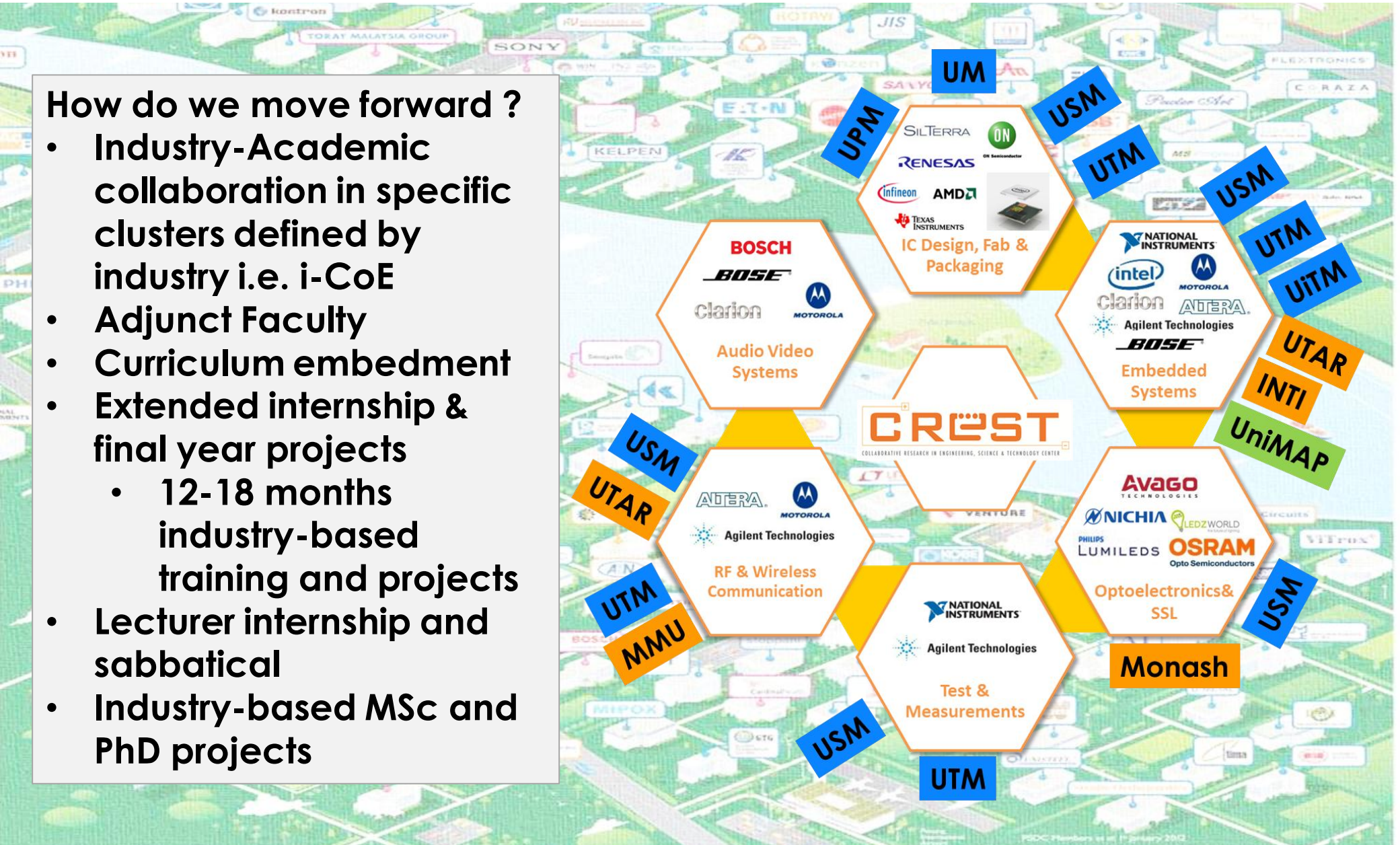
(5) Seeding of **Industry Experts, Golden Talent** and **Latent Talent** as coaches to the interns, apprentices, research assistants and project teams.

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



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

10 companies have signed up to become Founder Members of CREST

USM's Science and Arts Innovation Space (SAINS)

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

- **CREST has syndicated with key Federal Government Agencies**
- **Endorsed by the Economic Council**

Thank You

www.talentcorp.com.my

www.mycrest.com.my