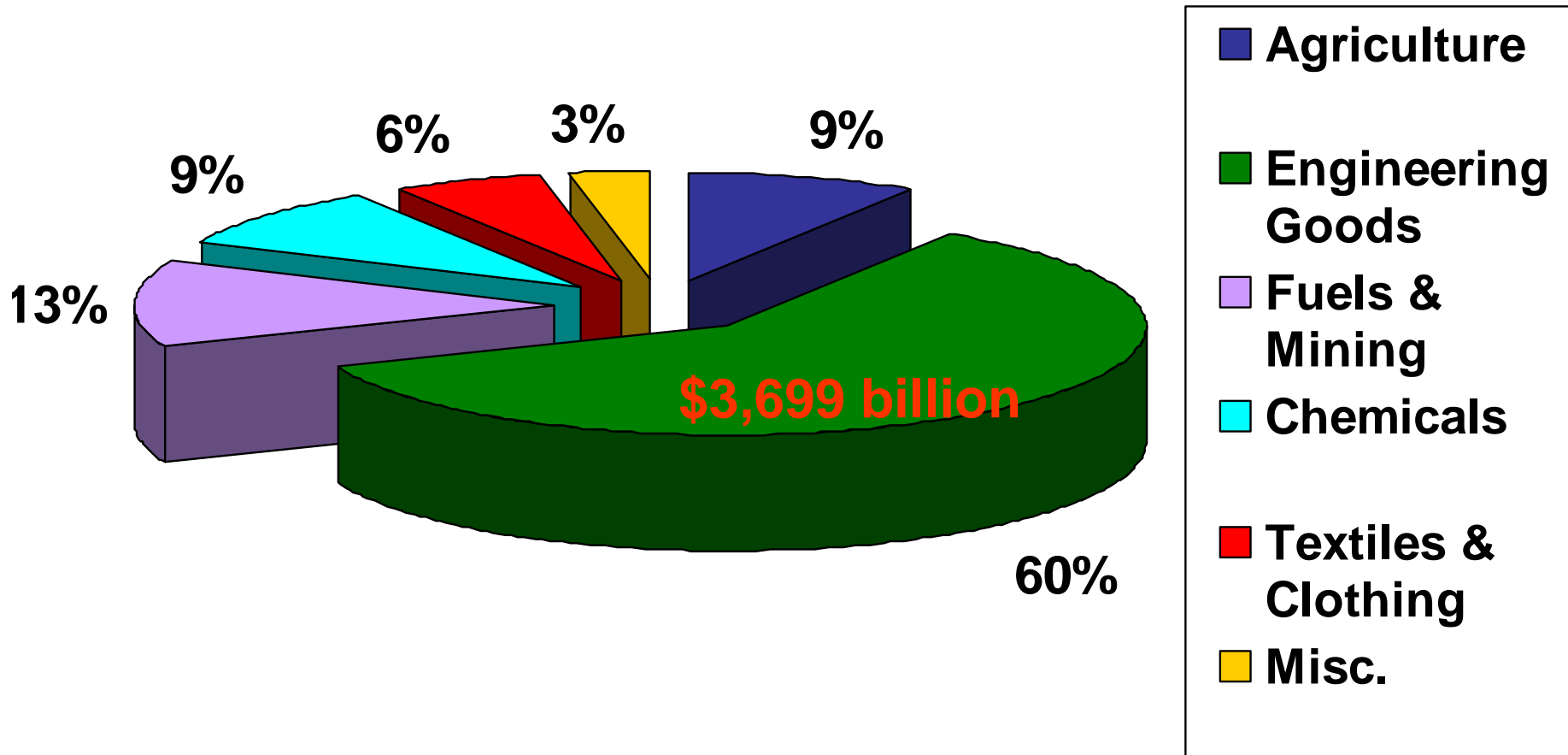


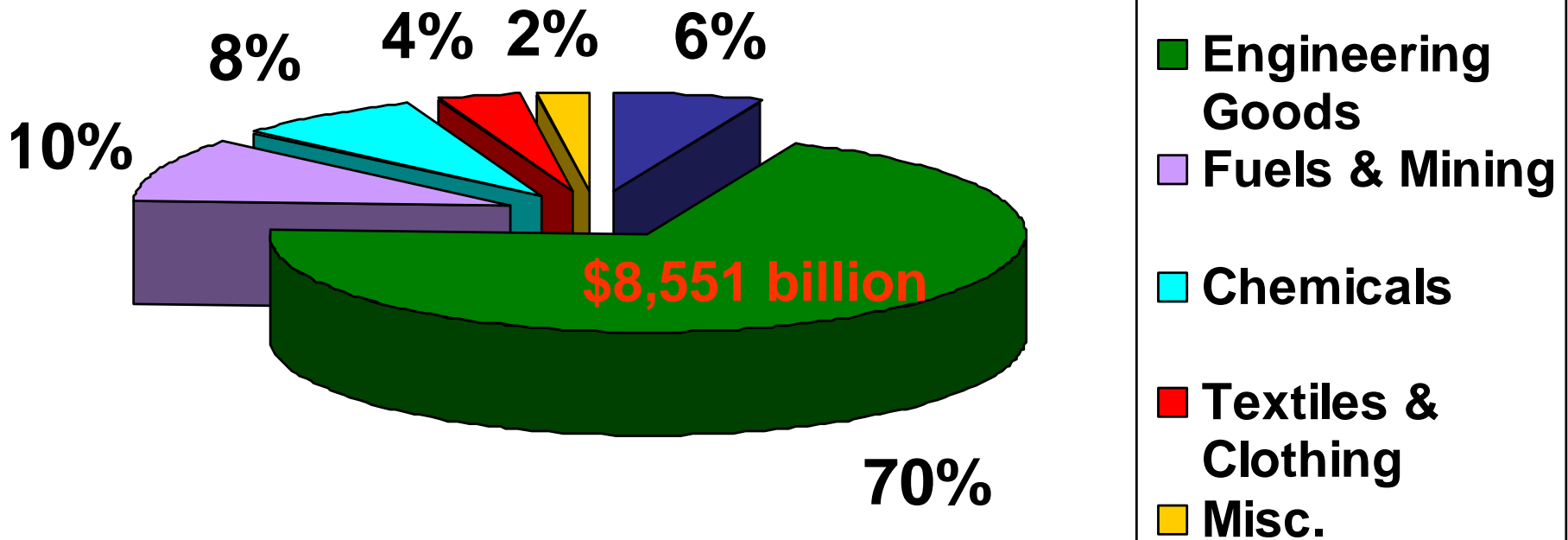


Combining Scientific
Know-Why with
Technical Know-How

World Trade Composition in 2000



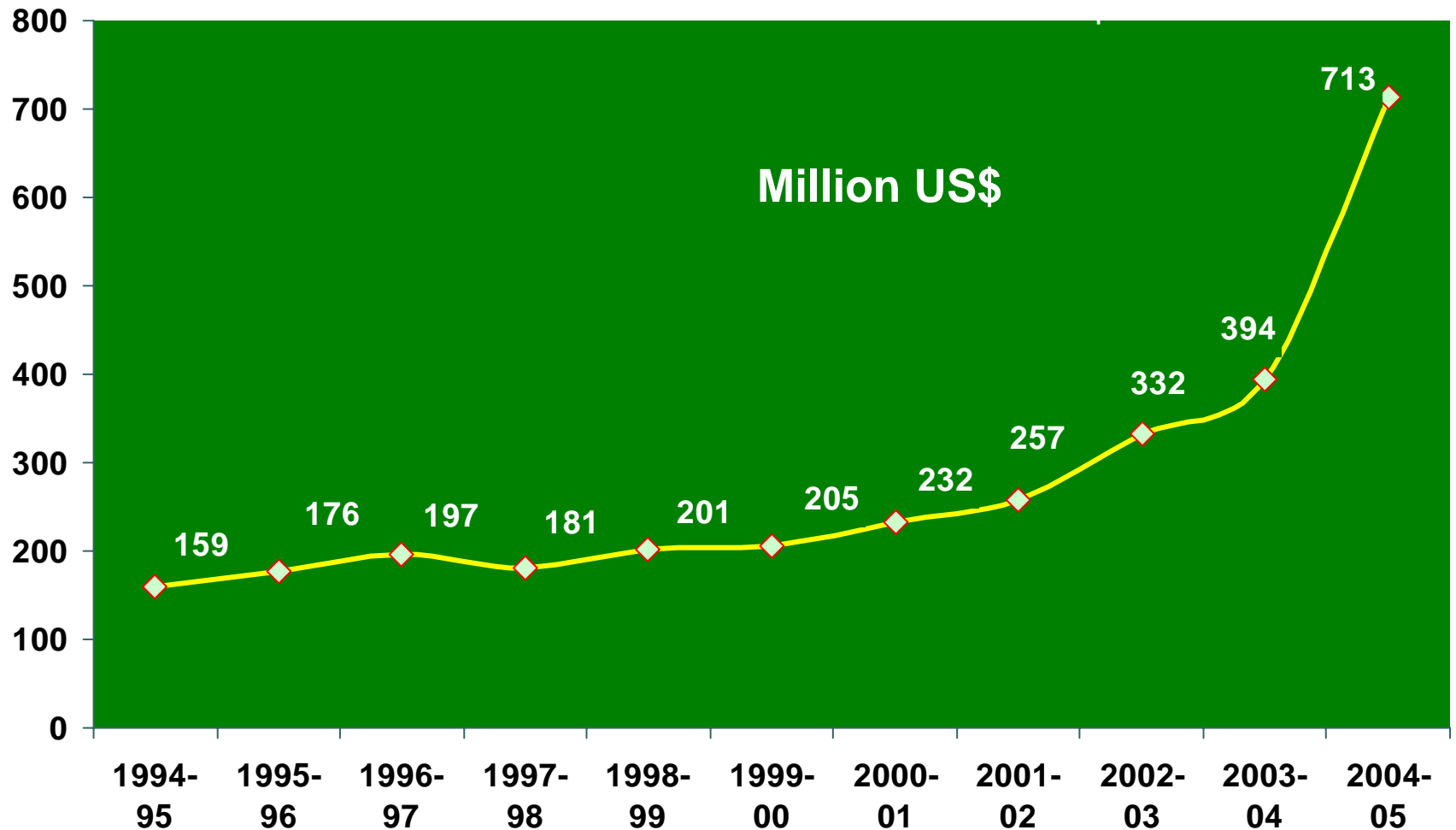
World Trade Composition in 2004



Source: WTO Database

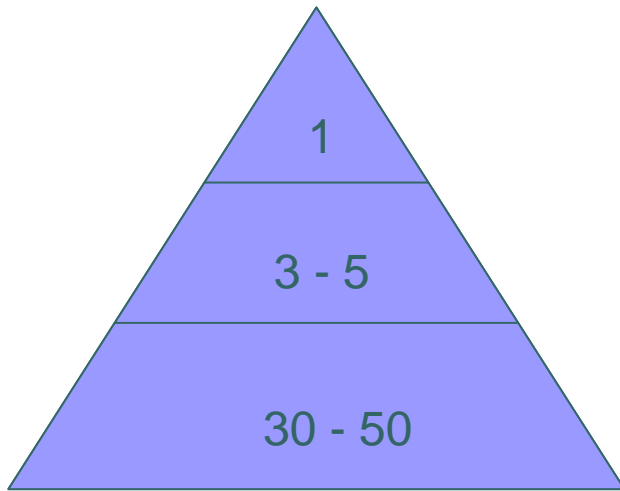
EXPORT OF ENGINEERING GOODS

Source: EDB



Integrated workforce pyramid: where do we stand?

The Optimum skilled work force distribution for industry

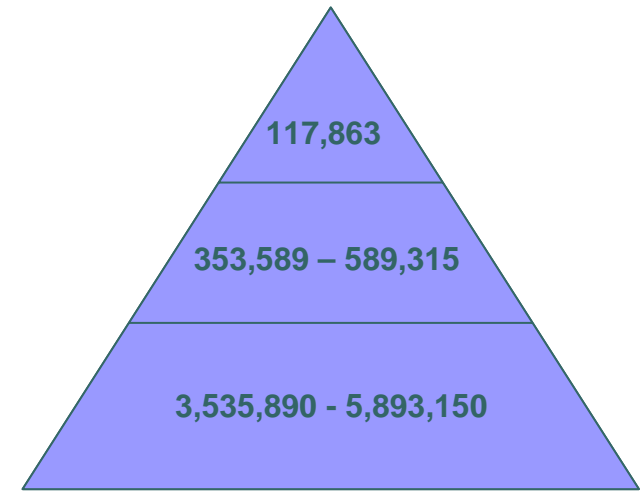


Optimum ratios

Degree level

Diploma level

Certificate level

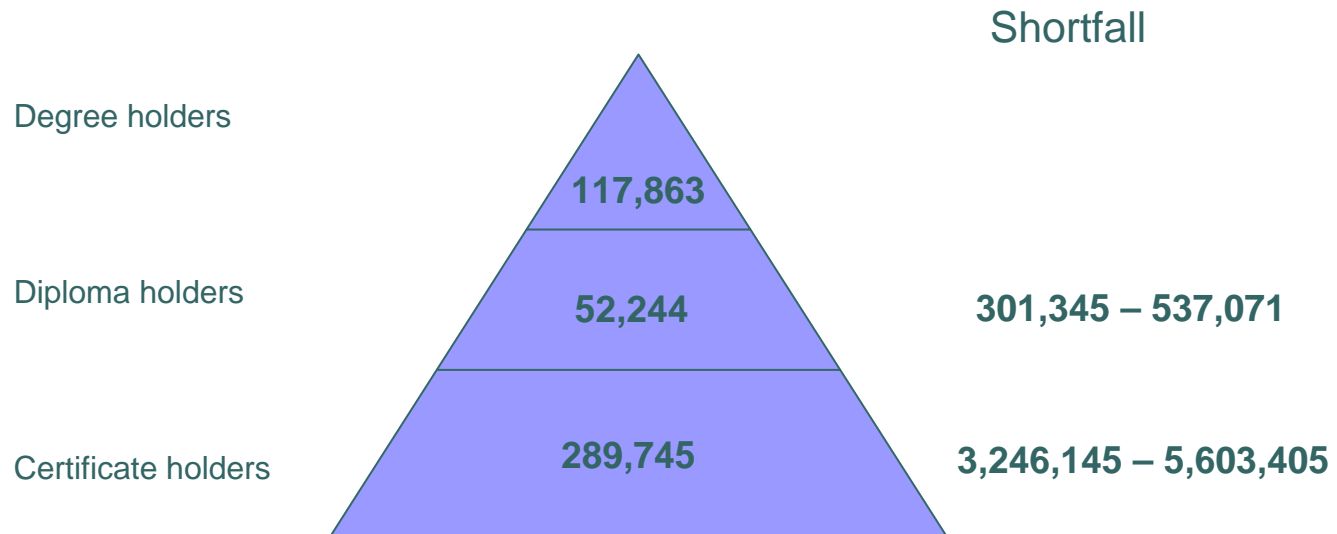


Optimum numbers

(Based on number of university going students in Pakistan)



The situation





Need

Recent developments have created a need for professionals with:

- Combination of analytical skills with hands on technical skills
- Power to both conceive and create
- Quality in both of these
- A passion for what they do



We need institutions that prepare students for real life

- Need to **Learn** and prepare for professional life
- Often they have to **Unlearn** when they go to a professional environment and almost start over



Ingredients for success

- Knowledge/Understanding
- Hands on Skills
- Competence
- Passion for continuous learning
- Awareness
- Sense of responsibility
- Ability to organize
- Ability to communicate
- Integrity



Concept

- Connect institutions of higher learning with vocational institutes
- Mix advanced learning with practical know-how
- The German dual training system as a guide



What should we do?

- Teach science to students getting **vocational training** to enable them to continue studying for higher qualifications at universities
- Curricula of **university students** to include application of sciences in vocational institutes connected to institutions of higher learning



Benefits

- Universities producing quality professionals with much sought for applied and analytical skills
- Knowledge will reside with people who know how to use it, in a knowledge economy



Cornerstones

- Industry leaders as part of governing bodies and senate
- Alumni be involved in review and revision of the curriculum
- Linkages with international knowledge/skill centres



An Example: UniKL

- Establish a leading technical training, education and research institution in the region
- Balance and connect academic knowledge with practical skills



The Institutes

- Malaysian Spanish Institute - MSI
- British Malaysia Institute – BMI
- Institut Infotech MARA – IIM
- Malaysia France Institute - MFI
- Malaysian Institute of Aviation Technology – MIAT
- Malaysian Institute of Chemical & Bioengineering Technology – MICET
- Malaysian Institute of Marine Engineering Technology - MIMET



3 Faculties

- Faculty of Computer Engineering Technology
- Faculty of Engineering Business Management
- Faculty of Product Design and Manufacturing



Qualifications

- Bachelor Degrees
- Diplomas
- Certificates



Diplomas

- **Engineering Mechanical Design and Development**
- **Engineering Technology : Mould Manufacturing**
- **Engineering Technology : Production**
- **Engineering Technology : Automated Regulation and Control**
- **Engineering Technology : Electromechanical Installation & Maintenance**
- **Information technology**
- **Multimedia**
- **Computer Systems and Network**
- **Animation**
- **Electrical Engineering**
- **Electronics Engineering**
- **Medical Engineering**
- **Telecommunications Engineering**
- **Engineering and Computing**
- **Engineering Technology**
- **Automated System Maintenance Technology (ASMT)**
- **Electrical Equipment and Installation Technology**
- **Machine Building and Maintenance Technology (MBMT)**
- **Air Conditioning and Refrigeration**
- **Metal Fabrication Technology (MFT)**

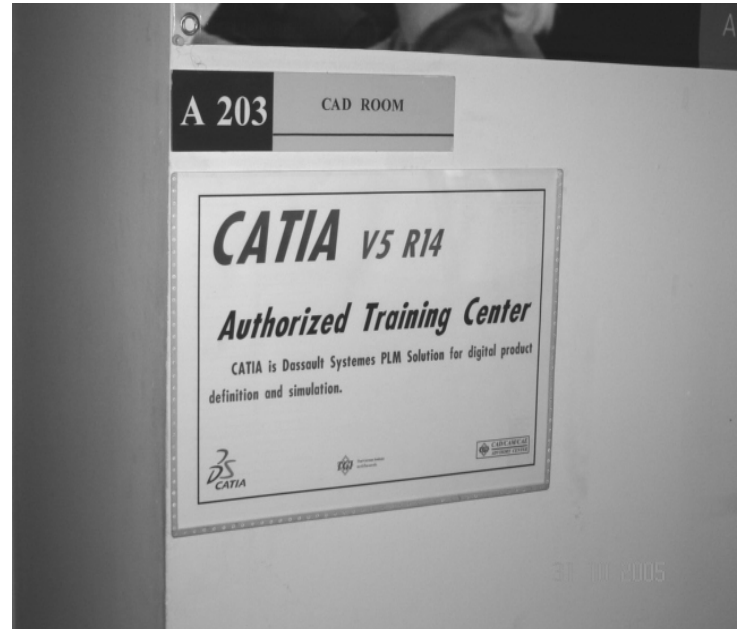
- 
- **Welding Technology (WT)**
 - **Computer and Networking Technology program**
 - **Automotive Maintenance Technology**
 - **Chemical Engineering Tech (Environment)**
 - **Chemical Engineering Tech (Bioprocess)**
 - **Chemical Engineering Tech (Food)**
 - **Chemical Engineering Tech (Chemical)**
 - **Chemical Engineering Tech (Polymer)**
 - **Engineering Technology in Ship Construction and Maintenance**
 - **Engineering Technology in Ship Design**
 - **Aircraft Maintenance and Manufacturing Technology (Manufacture)**
 - **Aircraft Maintenance and Manufacturing Technology (Composite)**
 - **Aircraft Maintenance and Manufacturing Technology (Avionics)**



Bachelor Degrees

- **Electrical Engineering**
- **Electronics Engineering**
- **Bachelor of Information Technology (Hons) in Software Engineering**
- **Bachelor of Information Technology (Hons) in Computer E-Commerce**
- **Bachelor of Multimedia Technology (Hons) in Interactive Multimedia Design**
- **Bachelors of Engineering technology**
- **Industrial Automation and Robotics Technology**
- **Air Conditioning and Industrial Refrigeration**
- **Mechatronics**

Industrial links





Thank You

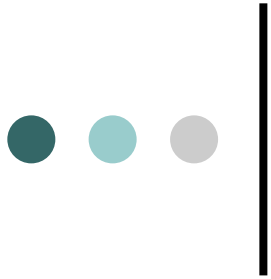




More information

pdf document in the ‘common cabinet’
titled

**“Insights gained from
organizations visited in the far
east”**



International Study Visits

Malaysia, Singapore, South Korea, Thailand, Spain



- Government run organization
- 850 research and development professionals
- High tech. research in the areas of
 - Automotive
 - Electrical,
 - Textiles,
 - Electronics
 - Semiconductors
 - biotechnology
- Teams comprise researchers from universities and experts from industry
- System of knowledge management has evolved through which the experience is transferred







Korean Dies and Moulds Industries Cooperative

- To link our TDM centres with rest of the world
- KODMIC provides a 500 member professional support along with capital investments for projects
- It has its own funds along with government aids and a large number of other resources like information, management and technology



Applied Research at INASMAT

Similar institutes

	Country	Institutes
	Malaysia	<ul style="list-style-type: none">•German-Malaysian Institute (GMI)•Malaysian-French Institute (MFI)
	Singapore	<ul style="list-style-type: none">•Nayang Polytechnic Institute•Singapore Precision Engineering & Tooling Association (SPETA)•Institute of Technical Education (ITE)
	Thailand	<ul style="list-style-type: none">• Thai German Institute (TGI)
	Spain	<ul style="list-style-type: none">•LEA-Artibai Institute

FOCUS



- **Teachers Training**
- **Collaboration**
- **Curriculum Development**
- **Environment**
- **Facilities design**

- Combination of collaborations with **France, Germany & Japan**
- Focus on **enabling technologies**
- Concentrate on **design and analysis**
- Value **knowledge management**
- Work in **partnership with industry**
- Runs on the teaching factory concept
- A teacher is a **Mentor, Designer and a Project Leader**
- Students follow a **44 hr/week** schedule during projects
- **Fast course revisions** (every 6 months)

Teaching Factory Concept

- Clean, Simple & Visible
- Modular Design



CAD set up at Nanyang



CAM facility at Nanyang



KITECH Mould Making Facility

Students at Nanyang



Singapore Precision Engineering and Tooling Association (SPETA)

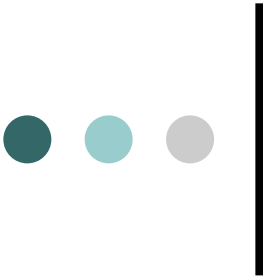


- Provide 2 year skills training courses with Institute of Technical Education (ITE)
- Focus on key skills
- 80% of the student fee is subsidized by the government
- ITE has links with FADMA



German Malaysian Institute (GMI)

- Collaboration with GTZ (Germany)
- Ladies make up 15% of the total student population at the institute
- GMI operates like a business and generates its own revenue
- Focus is on self reliant and independent learning
- Works on the Malaysian National Dual Training System (NDTS)
- Thrust is towards life long-learning networking and team work



Training of trainers at GMI



MFI- Malaysian French institute

- Collaboration with the government of France
- Initial programs based on French Vocational Training Programs
- Mix of industrial and academic professional experience
- French system of close interaction: Class of typically 14 persons

TGI: Thai-German Institute

- Collaboration with German government
- Response to a study finding areas needing attention
 - Tools Dies and Moulds
 - Automation and Control
 - CNC/CAD/CAM
- Services provided by the centre include
 - Industry projects
 - HR development, needs analysis and advice
 - Materials testing
 - Consultancy
 - Information centre
 - Also provide (market) intelligence to government and private sector
- TGI has support from 12 software suppliers
- 50 % of the initial staff at TGI formed its own companies

Training areas at TGI

