

will be blacklisted." Earth movements had caused the expansion joint to move, it was said. The 15-storey building is divided into two sections.

200m long. Therefore, the expansion joint is required as a

King awa

velopment Bank (IDB) president Dr Ahmad Mohamed Ali Al-Madani is among the recipients of the Panglima Mangk Negara (PMN) award which carries the title Tan Sri.

Arabia, has served as the president of the Islamic Development Bank since it was established.

He was overjoyed at being honoured by Malaysia as he

dent

the title Datuk, is Tabung Haji group managing director and chief executive officer Ismee Ismail.

Ismee, 43, joined Tabung Haji last year.

He is a member of the Chartered Institute of Management Accountants (UK) and the Malaysian Institute of Accountants.

Western Digital Malaysia's managing director Don Blake also received the P.J.N.



Dr Ahmad Mohamed Ali Al-Madani is overjoyed at being honoured by Malaysia

Hewitt

HE'S fallen from the graces of the British firm. Hewitt's fallen from the graces of the British firm. Hewitt's fallen from the graces of the British firm. Hewitt's fallen from the graces of the British firm.

But at 2 now a dotir Hewitt final place in the where the Agassi, Joh compatriot been so eag

"Maybe, Hewitt after traditionally

Investigations are being carried out to ascertain whether the width of the joint on the Domestic Trade and Consumer Affairs Ministry building has exceeded the limit allowed. floor of the building. — NST pictures by Ramdzan Masiam

dent

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Ta n Sri

Funding & Knowledge Led Growth: The Status in Malaysia

Mohamed Shariff

Director

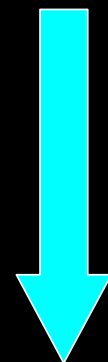


Innovation & Commercialisation
Centre

Universiti Putra Malaysia

Prosperity/success

- ❖ Measured globally in today's economy in currency of knowledge
- ❖ Successful countries recognise greatness benefits derived from:
 - Readiness to innovate
 - To accept change
 - To embrace new ideas
 - To take greater risk



Innovation
to
Market

Science, Technology & Innovation

- **Real driving forces behind modern economies**
- **Economies depend to a large extent on the translation of scientific discoveries into viable commercial propositions**
- **This is what ultimately determines the pace of economic & societal change**
- **And that in turn is what creates wealth**

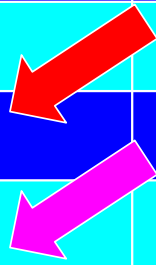
Malaysian R&D Funds

Malaysia Plan	Year	Ringgit (million)
.	1986-1990	400
.	1991-1995	600
.	1996-2000	903
8	2001-2005	141



Research in Developed & Developing Countries

Country	% of GDP	R&D Budget [Billion]
USA	1.2	122.5
Japan	2.5	20
UK	1	12
Korea	2.9	5
Singapore	1.18	5
Malaysia	0.75	0.5
Saudi Arabia	0.11	0.26
Egypt	0.34	0.014
Kuwait	0.22	0.07
Libya	0.1	0.13



Research in Developed & Developing Countries: No. of R&D Staff

Country	No. of R&D staff	Percentage of population
Japan	1,727,200	1.4%
UK	570,000	1.0%
USA	2,146,000	0.7
Korea	288,000	0.6
Malaysia	33,000	0.2
Kuwait	176	0.01
Arab World	15,000	0.01%

EDUCATION

GRADING THE SCHOOLS

America spends more on education than any other major economy does,

NUMBER OF UNIVERSITIES RANKED IN THE TOP 200

1. U.S.	54	4. Netherlands	10
2. U.K.	24	5. France	9
3. Australia	17	5. Germany	9
4. China*	10	6. Canada	8
4. Japan	10	7. Switzerland	7

GDP SPENT ON RESEARCH AND DEVELOPMENT

1. Sweden 3.9%

2. Finland 3.5

3. Japan 3.2

4. Iceland 3.0

5. U.S. 2.7

6. S. Korea 2.6

7. Denmark 2.6

8. Germany 2.5

9. Austria 2.2

10. France 2.2

SOURCES: WIPO, OECD


TECHNOLOGY

INVENTING THE FUTURE

Other countries are catching up, but the U.S. still claimed a third of all new technology patents last year.

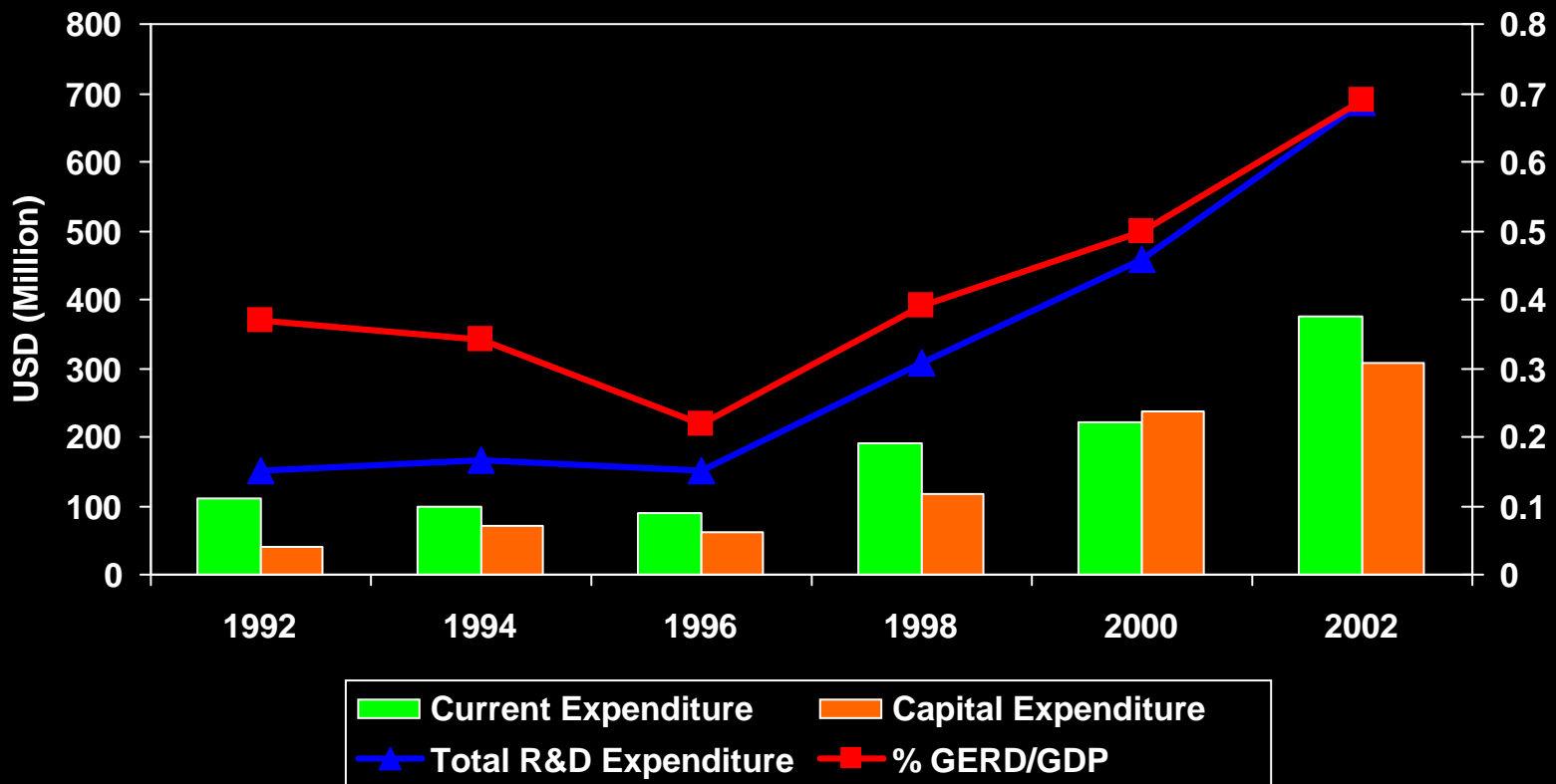
GROWTH OF PATENT APPLICATIONS, 2005

1. China	43.7%	6. Canada	9.8
2. S. Korea	33.6	7. Switzerland	7.5
3. Japan	24.3	8. France	6.6
4. Finland	11.6	9. Italy	5.1
5. Australia	10.1	12. U.S.	3.8



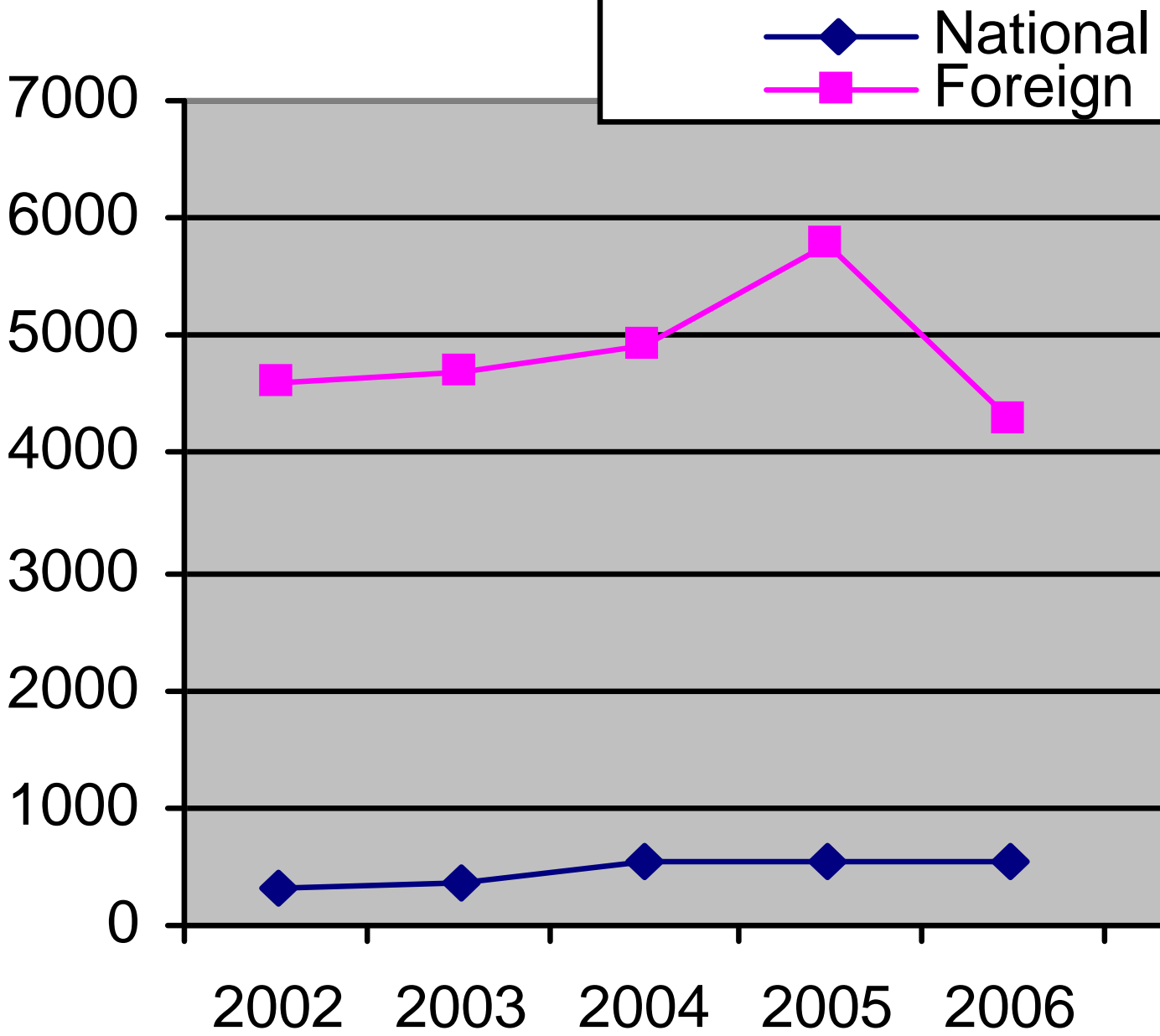
Gross expenditure on R&D (GERD) - Malaysia

% GERD/GDP



Application of patent and utility innovations 2001-2006

	Applications received		
Year	Malaysia	Foreign	Total
2001	271	5663	5934
2002	322	4615	4937
2003	376	4680	5056
2004	522	4920	5442
2005	522	5764	6286
2006	531	4269	4800
Total	2273	24248	26521



Research output

- **Publish papers**
- **Presentations at seminars – national & international**
- **Human resource development MSc, PhD**
- **Patents**

PM Budget speech 2005

Encourage researchers & inventors by;

- Providing appropriate royalty**
- Have share in company commercialising R&D product**
- Flexibility in establishing research collaboration with industry**

University Strategy - 9th MP*

- **Strengthen commercialisation activities**
- **Increase incubators for techno entrepreneurship**
- **Establish excellent centres for biotechnology**

* DG Dept of Higher Education

University Strategy – 9th MP*

- **Strengthen Malaysia's position as hub for ICT & global multimedia**
- **UM, USM, UKM & UPM – Research Universities of world standing**
- **Equity for researchers**
- **RM400 million for fundamental research**

* DG Dept of Higher Education

Commercialisation Era

- **At Ministry of Higher Education –
Division of Industrial Relation &
Commercialisation**
- **At Universities –
Establishment of Commercialisation
Centres**

MOSTI – Commercialisation Division

Research output Research output

- Publish papers
 - Patents
- Presentations at seminars – national & international technologies
- Human resources development (MSc, PhD)
- P

Paradigm shift

University Innovation Model

- Massachusetts Institute of Technology (MIT) best model for innovation: –
- MIT's charter directs Institute to Wealth Creation
- Over 100 technology licenses/ year
- About 20 companies founded/ year
- > 4000 companies founded overall
- Involvement in annual sales \$230B
- Created 1,100,000 jobs

Opportunities under RM9

- **Funds for:**
- **Setting up Co.**
- **Commercialisation**
- **Market development**

Opportunities under RM9

- **RM2.9 Billion - commercialisation of research**
- **Jointly develop products with private sector**

Type of funds available

1 Grants – no payback but certain input (in kind or cash) required from private sector

2 Funds - loan from Ministry of Finance or Bank

**Patent
Tech Transfer**

**Opportunities for
Funds**

**Collaboration
with industry**

**Further product
development**

**Product Market Opportunities
Feasibility study**



**Product development
New benefit
Safe**

CRDF 1

CRDF 2-4



**Commercial
Production**

**Garage
fund**



**Market
Development**



**Product
Sales**

**Techno
fund**

Biotech Acquisition Program

- ❑ Matching grant allocated **RM 60 million**
- ❑ For technology acquisition

Biotechnology Commercialisation Fund

- ❑ Undertaken by companies & international corporations
- ❑ Fund allocated **RM 30 million**

Malaysian Biotech Corporation - Seed Fund

- **up to RM2.5 million each**
- **seed or start-up costs in setting up
biotech companies**

Malaysian Biotech Corporation – R&D Matching Fund

- **up to RM1 million each**
- **provide matching fund for R&D projects which can develop new or improved products and/or processes and/or technologies**

Malaysian Biotech Corporation – International Business Development Matching Fund

- **up to RM1.25 million each**
- **promote expansion of BioNexus Status
Companies into global market**

Small & Medium Industries Development Corporation (SMIDEC) - Matching Grant For Business Start-Ups

- **Assist start-up of businesses**
- **Maximum RM500,000**
- **Improvement & upgrading of existing products, product design & processes**
- **To obtain certification & quality management systems**
- **Maximum grant allocated RM250,000**

Small & Medium Industries Development Corporation (SMIDEC) – Grant for RossettaNet Standard

- **Implement internet based common messaging standard for global supply chain management**
- **Conduct business electronically through common codes for sourcing of parts & components**
- **Enable Malaysian companies to adopt efficient business processes with large companies & prepare them to embrace global Supply Chain Management (SCM) System**

R & D Initiatives

- ❑ For genomics & molecular biology**
- ❑ Production of pharmaceutical & nutraceutical products**
- ❑ Promotion of agrobiotechnology activities**
- ❑ Fund allocated **RM 59 million****

Gov. R&D Incentives

- ❑ For bionexus company
- ❑ Income tax exemption for 10 years
- ❑ After 10 years, concessionary rate - 20%
- ❑ Tax deduction
- ❑ Exemption of stamp-duty & real property gain tax - within 5 years
- ❑ Accelerated industrial building allowance

E- Science Fund – MOSTI

- ❑ Generate new knowledge in strategic basic & applied sciences**
- ❑ Develop new products or processes necessary for further development & commercialisation in specific research clusters**
- ❑ Generate more research capabilities & expertise within the country**

InnoFund - MOSTI

Enterprise Innovation Fund (EIF)

To assist individuals/sole-proprietors, micro & small businesses/enterprises to develop new or improve existing products, process or services with elements of innovation for commercialization

Community Innovation Fund (CIF)

To assist community groups to convert knowledge/idea into products / processes / services that improves quality of life of communities

Industrial & R&D Grant - MASTIC

- ❑ Centralised grant system of financing science & technology (S&T) research in public institutions & research agencies**
- ❑ Responsibility of managing fund & implementation of S&T research & development (R&D) programmes**
- ❑ Other private agencies - MDC, MSC, & MTDC participate in providing assistance**

HCD Funds - MASTIC

- ❑ The Human Capital Development Fund Programme in S&T**
- ❑ To strengthen human capacity & capability for enhancement of S&T in Malaysia**
- ❑ To increase critical mass of scientist & researchers of the country**
- ❑ To enhance country's competitiveness through development of trained, innovative & creative human resource**

Loan & venture capital - MASTIC

- ❑ To help Small & Medium Industries (SMI) succeed from start-up through many stages of growth**
- ❑ Business loans to entrepreneurs & business owners of specialised industries**
- ❑ To enable entrepreneurs to obtain up to 100% loan & credit facilities to support their business aspirations**

Loan & venture capital - MASTIC

Banks - loans:

- Credit Guarantee Corporation Malaysia Berhad
- Bank Pembangunan dan Infrastruktur Malaysia Berhad
- Bank Industri dan Teknologi Malaysia Berhad

MAVCAP

-  Incorporated in 2001 by Govt. of Malaysia
-  RM500 million - for investment in, nurturing & growing technology sector
-  Investing & growing of venture capital market
-  A new & bold Government-initiated
-  Private-sector managed move to spearhead country's charge towards a knowledge-based economy before 2020

MAVCAP

Seeking fund –Direct ventures

- **Only a select group of companies will qualify under MAVCAP's stringent investment criteria**
- **Enjoy best intellectual, business & financial resources at MAVCAP's disposal**

MAVCAP

Seeking fund – Seed Venture

- ❖ Opportunistic approach & involved in "priming the pump" for seed stage deals**
- ❖ Jump-start initiatives, growth process & build sustainable value in seed stage companies**
- ❖ Conduct educational & promotional programs to encourage entrepreneurs & technopreneurs with feasible ideas germinating into viable business plans**

Selection criteria

- **Good & experienced management**
- **Technology products/services that are in demand or are innovative**
- **Market scale & business scalability**
- **Good value proposition**
- **Sound business model & execution strategy**

Selection criteria

- **High growth companies in fast-growing markets**
- **Clear exit strategy**
- **Synergy (within portfolio of partner companies)**
- **Other criteria - depending on stage of development of a business, the country of its origin & its continuing development plans**

Stage Weighting - MAVCAP

- ❖ **MAVCAP not restricted to any stage of investment**
- ❖ **Invest at least 30% of its fund in businesses that are in start-up & early stages of their development**
- ❖ **The rest will be invested in expansion, growth & late-stage businesses**

Geographical Focus

- ❖ **Priority – to opportunities that scale across Asia**
- ❖ **Initially 70% for direct investment into Malaysian-based or controlled companies**
- ❖ **Criteria for investments made overseas**
 - **Technology transfer to Mysia within 12 months of investment; or**
 - **Significant presence to be set up in Mysia within 12 months; or**
 - **Investments must provide a network (sales, distribution or otherwise) or value added services to MAVCAP & its partner Co.**

Country cluster strategy - MAVCAP

- **Develop in-depth knowledge of select countries or group of countries & investing in them**
- **The clusters selected are :-**
 - **Malaysia & Singapore**
 - **Japan & Korea**
 - **Greater China (China, Taiwan & Hong Kong)**
 - **United States of America**

Investment Guidelines MAVCAP

- ❑ No majority positions unless in exceptional circumstances**
- ❑ Direct investment other than start-up – range RM500,000 - RM10 million per investment**
- ❑ Maximum investment per company is RM40 Million**
- ❑ For start-ups investment is RM50,000 to RM500,000**

Investment Guidelines MAVCAP

- **For private equity investment only**
- **Board membership (min. 1 representative on the partner board)**
- **Investment horizon for both initial & follow-on investments - average of 5 years for exit from initial investment**

Challenges

- | **The commercialization/business culture is new in Malaysian Research Institutes**
- | **Malaysian scientist not aggressive in marketing themselves & their products** 
- | **The private sector still skeptical -
Malaysian inventions** 

Challenges

- | **Products not highly demanded / attractive to industries**
- | **Lab-scale product / process; companies not convinced to invest**
- | **Not patentable products, difficult to protect IP. Easily copied, too risky for investment**

Challenges

- | **Innovative products but process involved not economically viable**
- | **No attempt to up-scale or modify products
Lack of Funds!**
- | **Poor timing, not targeted for the current markets**

Challenges

- Patent – non-tangible asset, evaluation is difficult
- Disclosure of critical technology knowledge can induce misconduct
- Market regulations & policy change
- Research is a long term commitment – return on investment is extended

Challenges

- **Work within the government system**
 - **New – unclear policies**
 - **Slow**

New leaders – different vision

Best Case Scenario

- **Good scientist – novel innovations should generate good income**
- **Novel technology can sell for a few million**
- **Some universities give 90% to researcher**

Worst Case Scenario

- ❖ **Co. kills off innovations**
- ❖ **Co. pays pittance**
- ❖ **Co. gets info from naïve scientist F O C**
- ❖ **Unethical practices for profit – backlash to scientist**
- ❖ **Poorly written agreement – benefits Co.**

Where do we go from here?

- J Increase research funds = % GDP**
- J Quantum leap research to higher level**
- J Strengthen research groups & excellent scientist**
- J Provide world class research facilities**
- J Generate wealth from R&D technologies**

J Generate more – IPs for nation building & wealth creation



Ashkurak

Haniyan

MTDC Garage Scheme

- Max RM500,000
- Does not need feasibility study
- Require business plan
- Entrepreneur to contribute (10%)
RM50,000



Commercialisation of R & D Fund (CRDF)

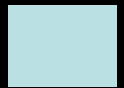
Coordinated by MTDC

- ❖ **CRDF I - RM500,000/project**
- ❖ **To cover feasibility study**
- ❖ **Market development**



CRDF 2 - 4

- **CRDF II** = Market development & Initial production & QC
- **CRDF III** = Commercial production
- **CRDF IV** = Product enhancement for business survivality (Continuous R & D and Innovation)



Techno funds

❖ i) Type A - Pre-Commercialisation

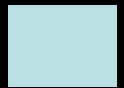
development of commercial ready prototypes/pilot plants/clinical trials/upscaling for demonstration & testing purposes but not commercial exploitation

i) Type B - IP Acquisition

acquisition of IP (laboratory scale prototype) from overseas or local sources for further development up to precommercialisation stage

Techno funds

- ❖ **Industry applicants are encouraged to collaborate with one or more GRI/IHL (public or private)**
- ❖ **GRI / IHL applicants must collaborate with one or more industry partners who should contribute financial or non-financial resources equivalent to 50% of the total project cost.**
- ❖ **Start up Co.**



Negotiation

❖ 1st offer RM200,000

❖ Now **RM 4 million**

❖ + 20% equity to researcher

❖ + 5% equity to UPM

❖ + Consultancy

Thanks to WIPO

Researcher's role

Seminar **Researcher**

No experience in commercialisation or entrepreneurship

Training researchers on all aspects of commercialization including IP protection

Convince the industry

- Industry search for products & world class expertise and technologies

- In house experts & technology – not tapped

- Weak in many international markets - proactive smart partnership

