



Technology transfer in a Malaysian University: UPM's experience

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**Putra Science Park
Universiti Putra Malaysia (UPM)**





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- **Structure & functions of TTO**
- **UPM's success in TT**
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UPM Faculties

- Agriculture
- Food Science & Tech.
- Biotechnology & Biomolecular Sciences
- Forestry
- Computer Science & Information Technology
- Human Ecology
- Design & Architecture
- Medicine & Health Sciences
- Economics & Manage.
- Modern Languages & Communication
- Educational Studies
- Science
- Engineering
- Veterinary Medicine
- Environmental Studies
- Agri. & Food Sciences





R&D Institutes

- 1. Inst. of Bioscience (IBS)**
- 2. Inst. of Advanced Technology (ITMA)**
- 3. Inst. for Mathematical Res. (INSPEM)**
- 4. Inst. of Agri. & Food Policy Studies (IKDPM)**
- 5. Inst. of Trop. Agriculture**
- 6. Inst. of Trop. Forestry & Forest Products (INTROP)**
- 7. Inst. of Social Science Studies (IPSAS)**
- 8. Halal Product Res. Inst. (HPRI)**
- 9. Institute of Gerontology (IG)**





University information

Academic staff No. 1,492

Student No. 30,000



Total:
US\$81.1m

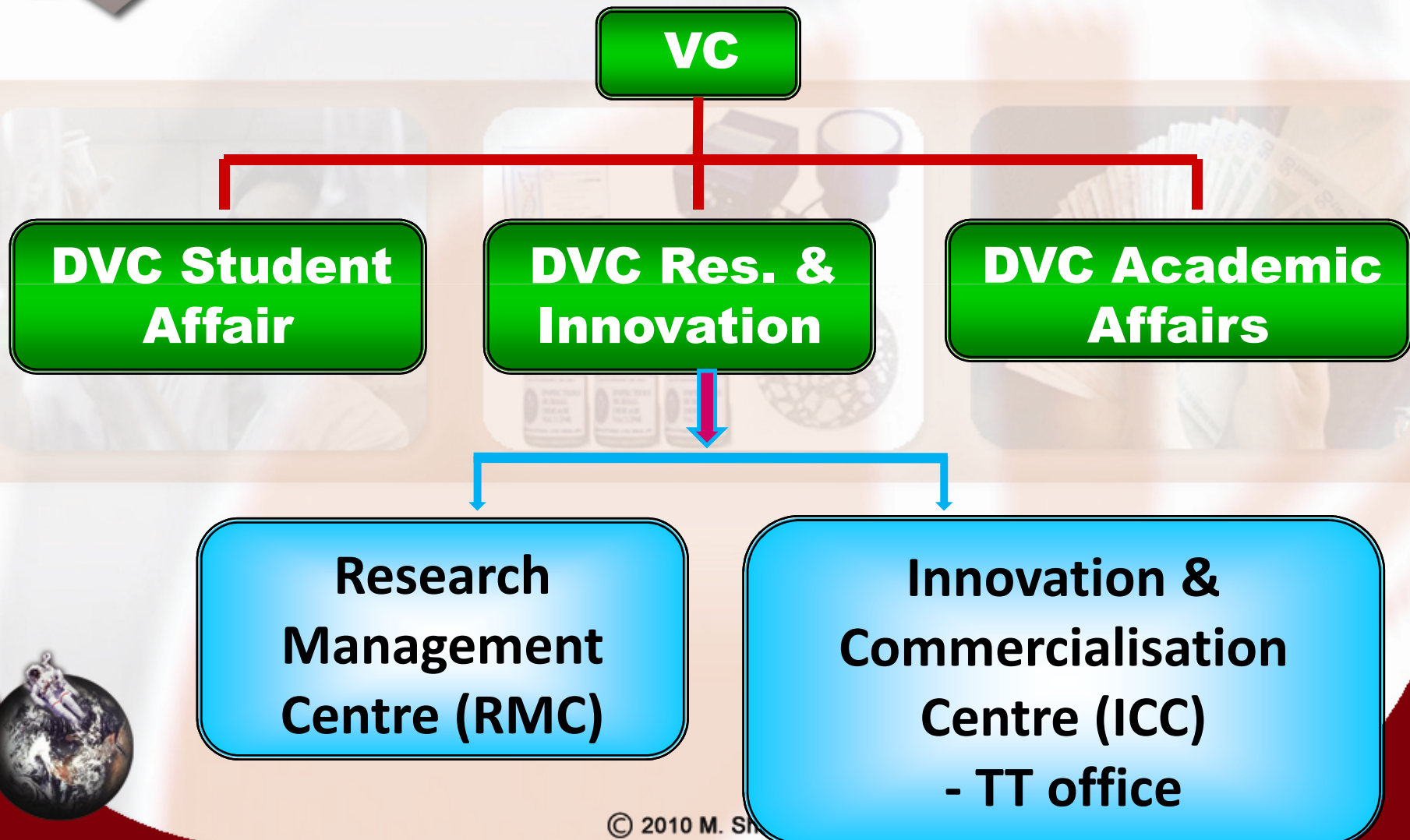
Research Funding 2006-2010

Projects Nos. US\$

• Public Funds	ScienceFund	523	27.0
	Fundamental	608	13.3
	RUGS	876	18.8
	Top Down Nat. Biotech.	25	5.1
	Technofund	11	2.7
	MTDC	10	6.5
	Others	6	0.2
• Private Funds	FELDA	28	1.5
	MPOB	17	1.0
	Others (MTSF, GABA, Etc.)	45	2.5
• Inter. Funds	International	59	2.1



Organizational Options for Tech. Transfer Office



ICC ORGANISATIONAL STRUCTURE - UPM

DVC Research & Innovation

1 April 2006

Director

General Admin

IT

Legal

Currently 29 staff

**Deputy Director
Commercialisation**

**Deputy Director
Promotion /Training**

**Deputy Director
Intellectual Property &
Contract research**

TTO Divisions & functions

Commercialisation

Planning

- Business planning
- Business develop
- Market research
- Garage/incubators
- Issues/Policy

Commercialisation

- Entrepreneurship
- Marketing
- 'Spin-off' Company
- Commer grant
- Monitoring project/Co.

Promotion/ Training

Promotion/ Training

- Promotion
- Roadshow
- Training
- Public retlation
- Branding
- Matchmaking

IP/Contract Research

Intellectual Property

- Patent
- Trademark
- Plant variety
- Com Dev.
- Research
- Contract Research
- Technology transfer



Patent 2009

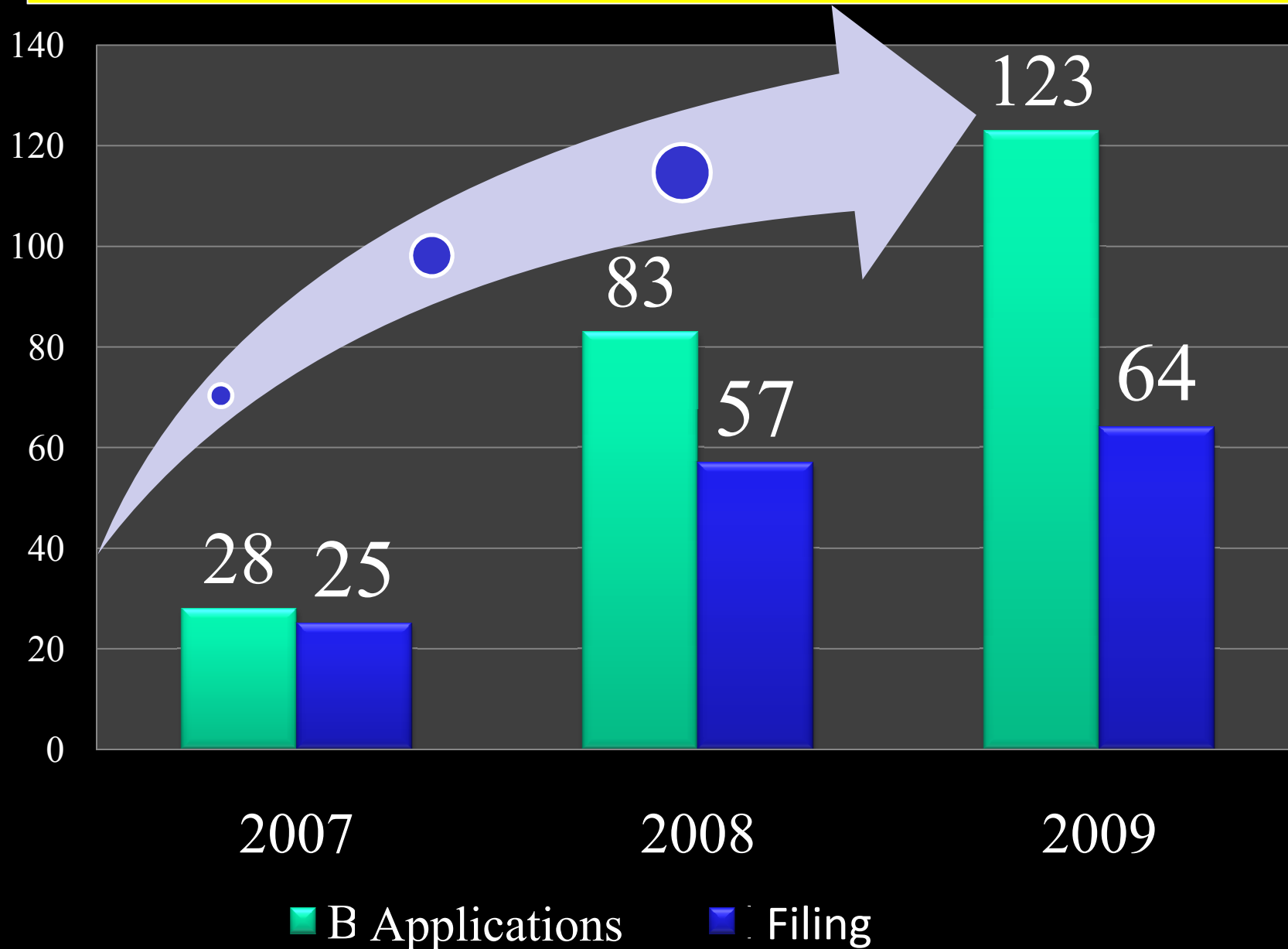
Patents Granted 53

318 Patents Pending

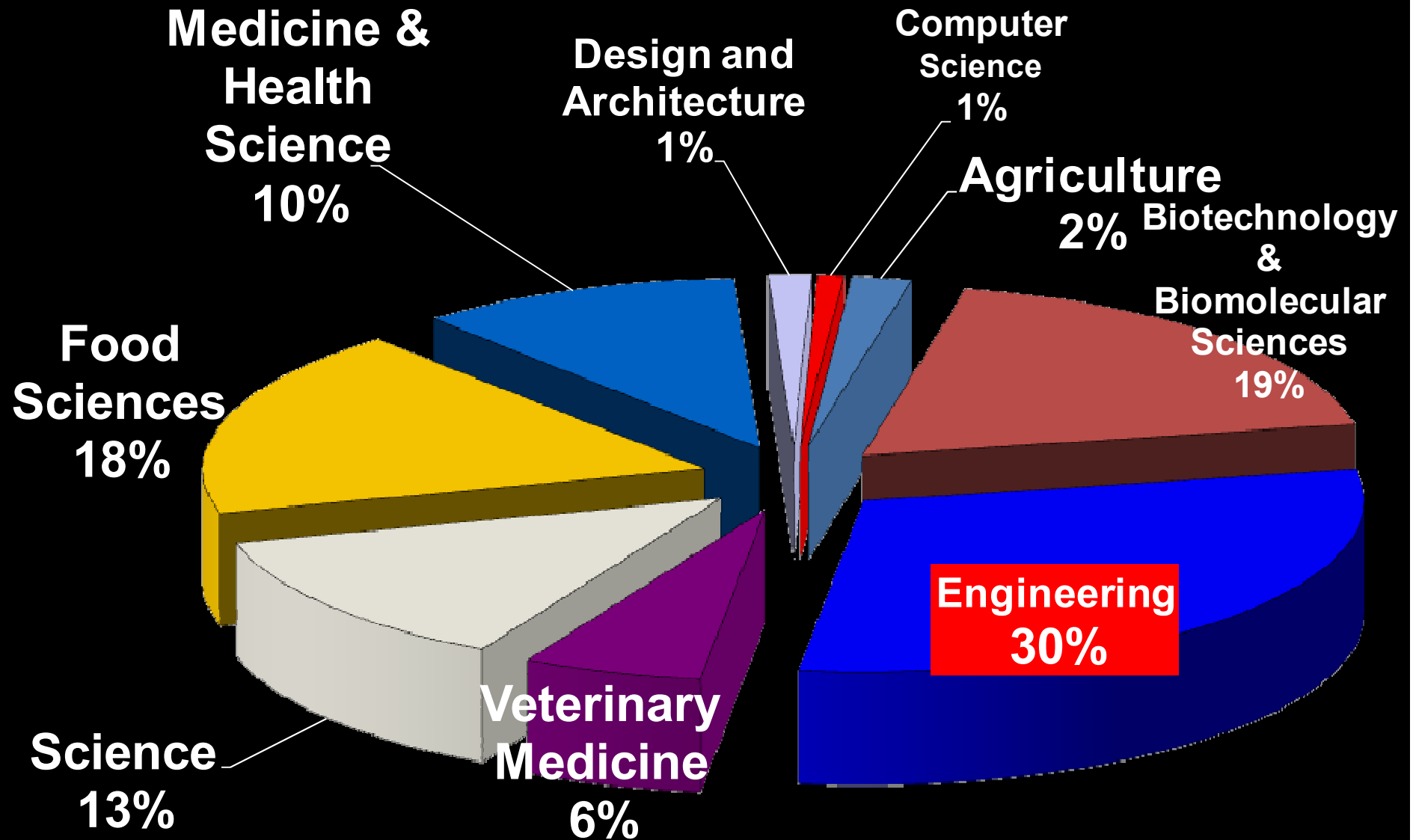
Filed in foreign countries 98

- China
- European
- India
- Indonesia
- Japan
- Philippine
- Singapore
- Switzerland
- Thailand
- Taiwan
- United Kingdom
- United States
- Vietnam

Patent Applications 2007-2009



STATISTICS ON PATENT FILED (2000~2009)





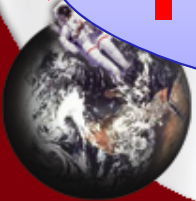
Commercialisation

20

Products/technologies

Gross Sale

>RM28 (\$8.57 million)





UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

COMMERCIALISED

Products & Technologies



Vita-Grow^R
RM 16.1 m



ZAPPA^R
GS: RM7.3 m



Fowl Pox Vaccine
GS: RM 2 m



NDV : V4-UPM
GS: RM 1 m

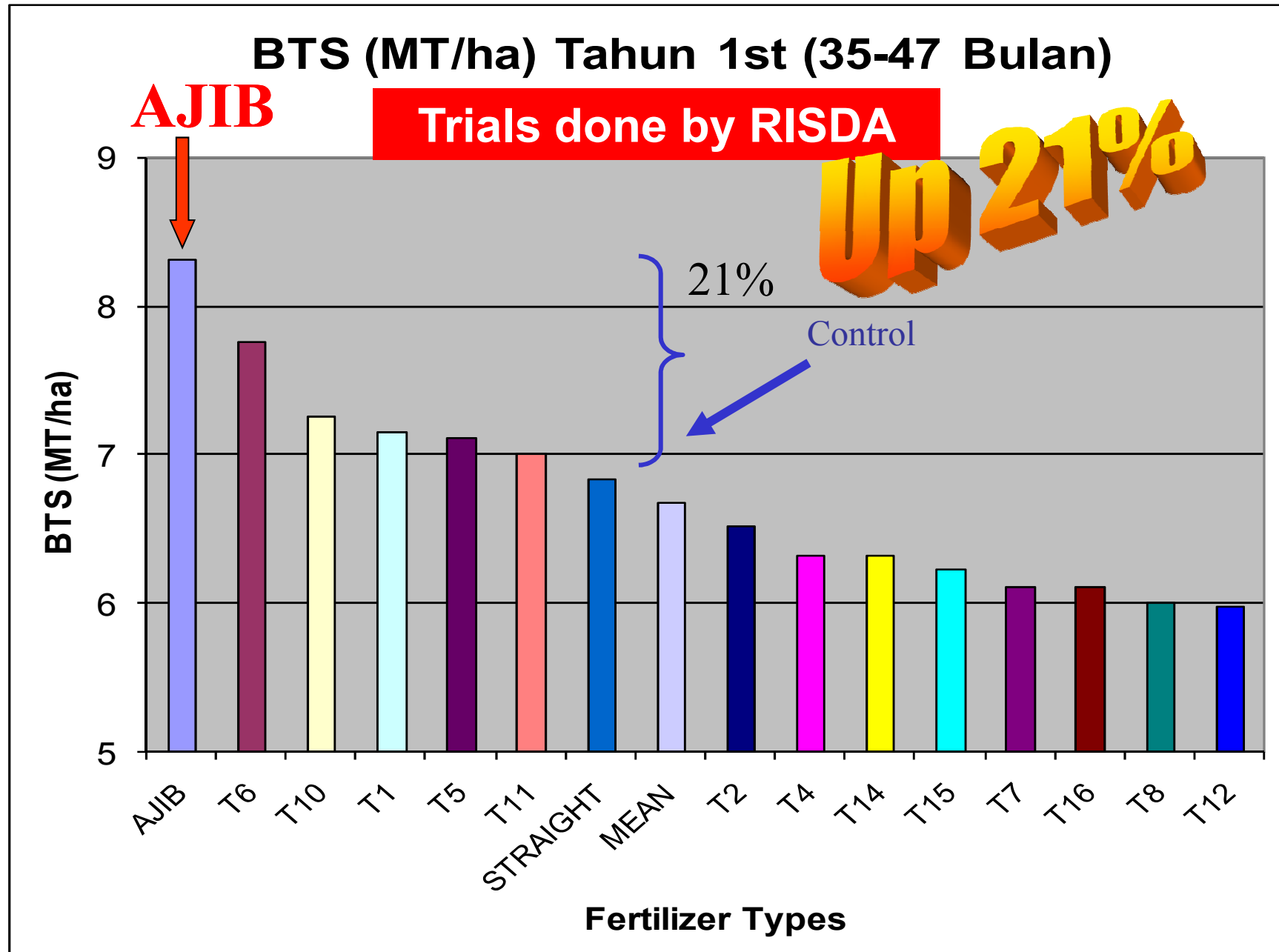


MyVAC UPM93
GS: RM 800,000



- Provide vigorous growth to rice seed grown under aerobic & anaerobic systems
- Increases root growth (130%) & shoot growth (62%)
- Increases Paddy Yield between 40 - 57%
- Conserves water usage
- Reduces diseases, & increases seed purity

Rank top out of 16 others products !

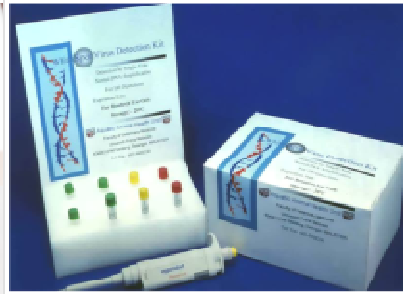




UPM
UNIVERSITI PUTRA MALAYSIA
BERILMU BERBAKTI

COMMERCIALISED

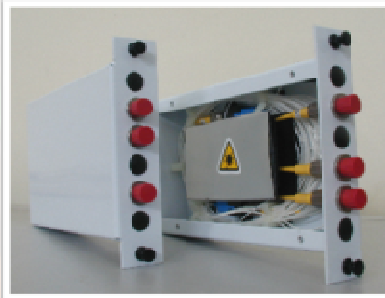
Products & Technologies



FAST TARGET™
GS: RM 400,000



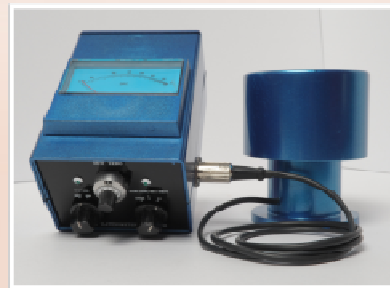
StellarLac™
OS: RM 200,000



**Fiber Duplexer
Module**
OS: RM 150,000



Stone Mastic
OS: RM 120,000



MRT Latexometer™
S: > RM 30,000



PALMGen
Producing the Best Breed Through Genetics

Cattle Breeding
Co: Putra Al-Mawashi
Livestock (M) S.B
A.P. Dr. Wahid Haron



Satiri Superdwarf
Co: Satiri S.B.
A.P. Dr. Mohd
Said Saad

**5 UPM
JV /**

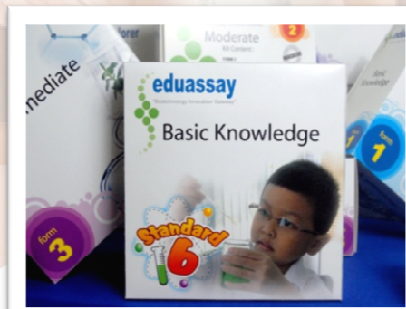
spin off Co.



High Quality Orchid
Co: Orchid Life S.B
(OLSB)
P.Dr. Maziah
Mahmood



CNG Composite Tanks
Co: Advanced
Composite Eng S.B.
-P.Dr. Fakhru'l Razi
-Dr. Mohd. Amran



Edu-Enzyme Assay
Co: Xeno Lab S.B.
A.P. Dr. Mohd Yunus
Shukor

How do we do it in UPM?

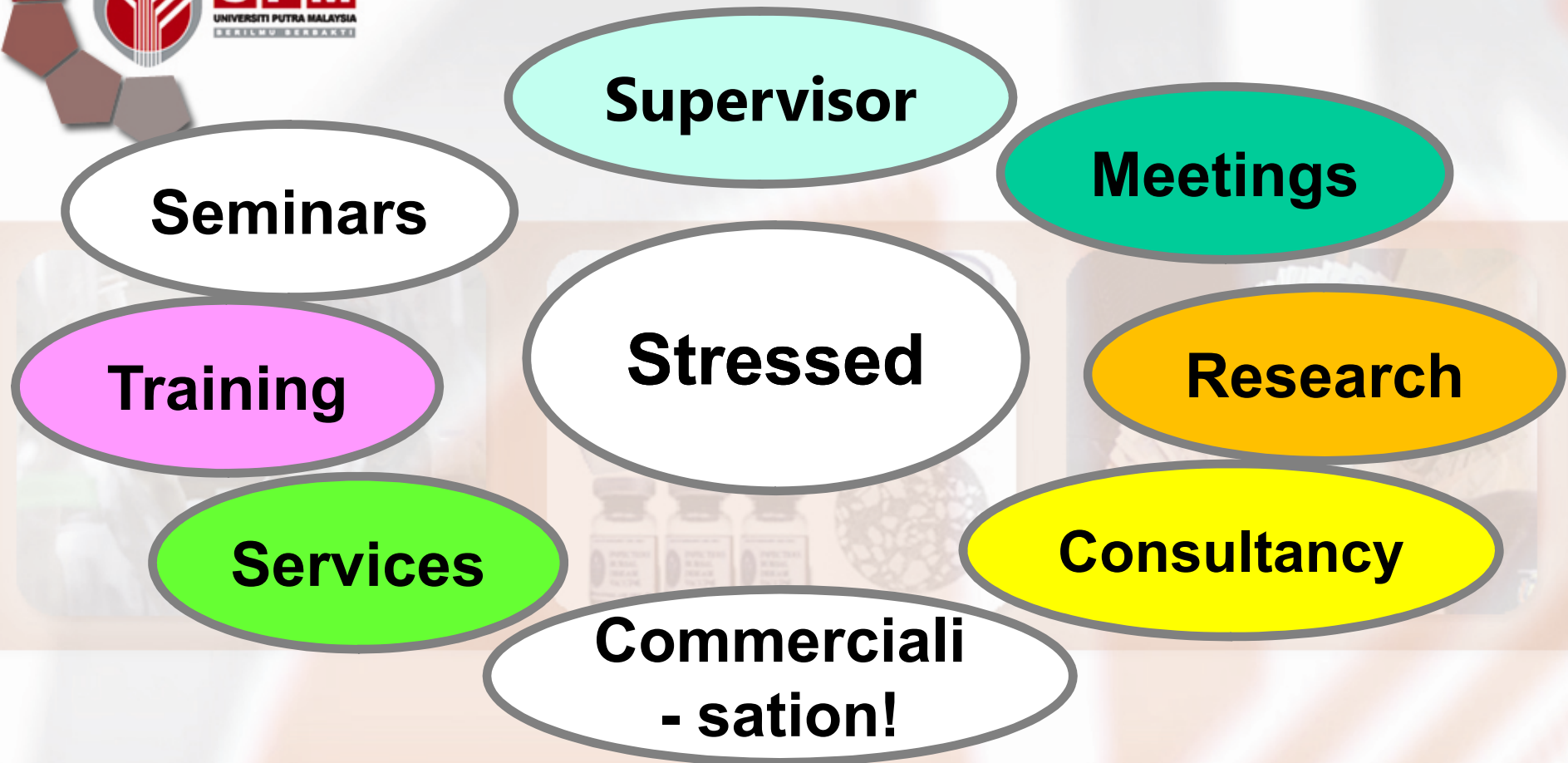


**Good
understanding
of our clients!**





Researcher's role



No experience in commercialisation or entrepreneurialship

Training researchers on all aspects of commercialization including IP protection

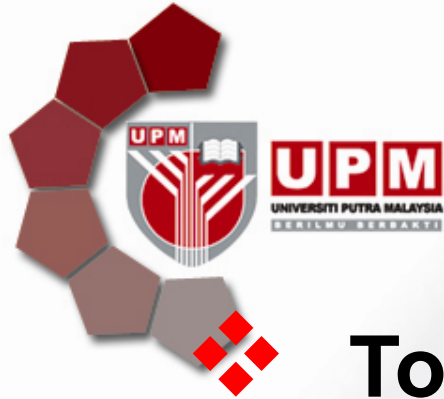


Awareness

- **Still only focus on publishing papers**
- **Importance of commercialization?**
- **Contribution to nation building?**
- **Income they can generate for themselves & team!**



IP & TT is a new culture in Univ.



Awareness campaigns

Top management

- **Vice Chancellor**
- **Deputy Vice Chancellors**
- **Registrar**
- **Bursar**
- **Deans**
- **Deputy Deans**



Involve the total enterprise!



Awareness campaigns



All academic staff



Road show to all faculties & Institutes

Get a feedback

Motivation!

Role of TMO to synergise with researchers



Training – Technology Transfer

- **Selected academic staff**
- **Have a patent or potential candidates**
- **At Univ. & PRIs**

Building core of knowledgeable group



Explain Business Philosophy

In Business

**IF
You don't
INNOVATE
&**

COMMERCIALISE

**You will
EVAPORATE**





To support business & industry

- **Manufacturers need a continuing flow of new products**
- **Co. need new products for growth**
- **Product life cycles are getting shorter all the time**





Industries need new technologies

- ❖ Private sector still keep looking for technologies from advance countries
- ❖ We have world class scientist & innovations
- ❖ We need to be proactive in promoting our innovations



Engine for future growth



Rich in Biodiversity

☐ Our natural resources

- several commodities
- byproducts
- medicinal value

☐ Some being patented by foreigners in other countries

Loss to the nation





Globalization

**Have to compete with
the rest of the world!**



**Cannot be complacent
or else we will be
dependent on other
forever!**



Wealth Creation & Nation Building





Univ. 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**



Wealth creation & Nation Building



Past main research output

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





More

Additional research output

- **Patents**
- **Lab scale technologies**
- **Marketable products (prototype)**

Develop IP & technology transfer culture



Paradigm shift required



**TTO must have
the expertise**

Have the right expertise!





Policy making & procedures

- **Introduce policy, draw up strategies & guidelines for TT**
- **Provide incentives**
- **Make it easy for academic staff to commercialize technologies**

Synergize with research staff & private sector to commercialize technologies



Incentives for researchers!



RM5,000 for filing patent



RM10,000 on receiving patent certificate



RM500 on disclosure





Incentives for researchers!

- **RM500 for Industrial design (Submission)**
- **RM1,500 after Registered**
- **RM2,000 for copyright (software)**
- **RM2,000 trademark for commercialised product**
- **Provide equity in joint venture company**





Disclosure/ Evaluation of technologies



Meeting every
2 weeks

- Meetings:**
- 2-3**
- i) Learn technology
 - ii) Approve/reject patent/copyright/TS
 - iii) Fine tune
 - iv) Add financial aspects



Match making with business partner

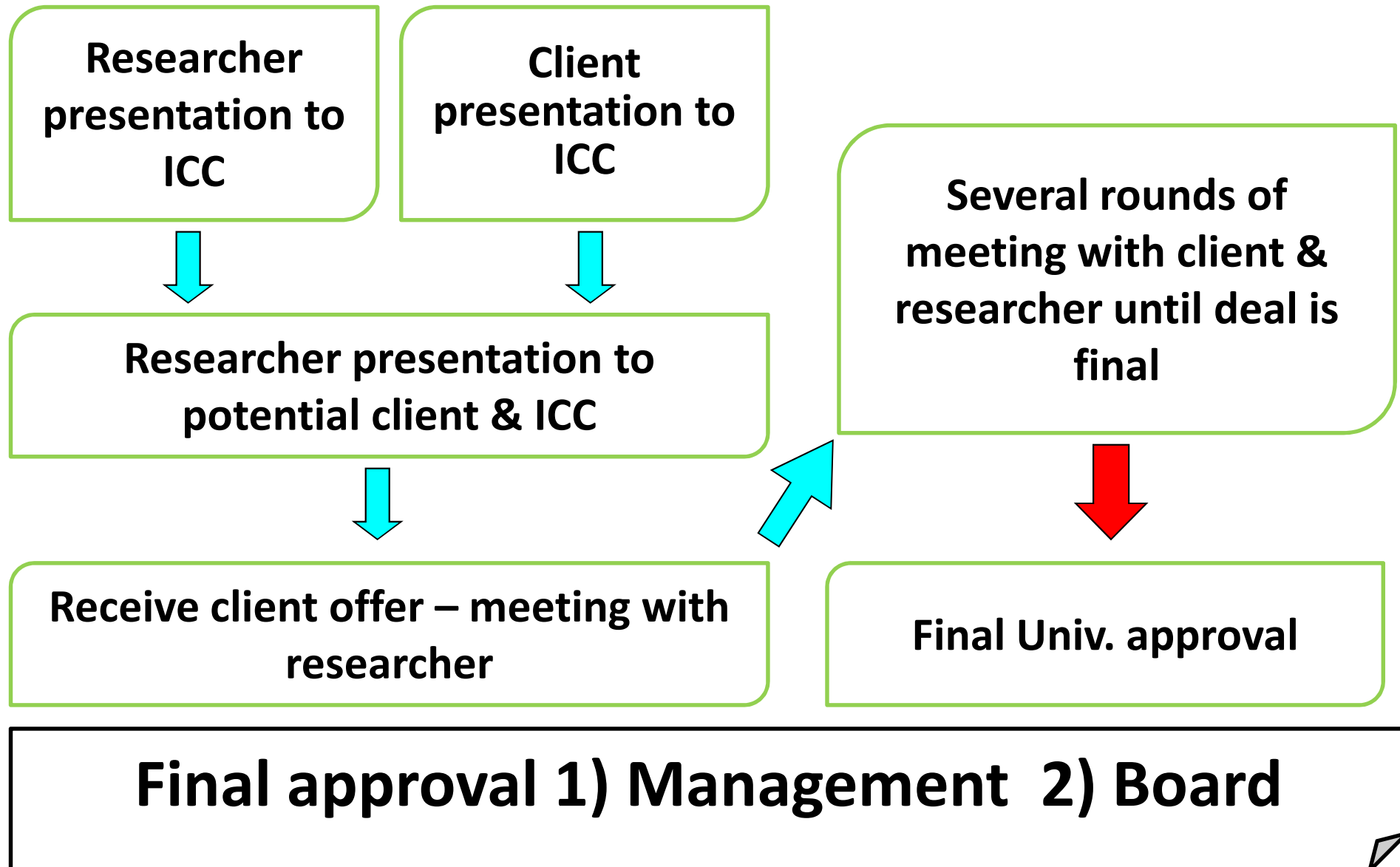
Meetings with entrepreneur & researcher until deal is finalised – MoA

- i) License deal**
- ii) IP assignment**
- iii) Application for grants “Technofund”**
- iv) Formation of spin-off Co.**



>5-10 meetings – a slow process

Commercialisation/Negotiation/ Match Making Process





IP Protection: Appropriate Strategies & Options





Intellectual Property

Hidden treasurers!

Engine for future growth

Era of I Economy





Confidentiality

- Panel members sign a non-disclosure agreement (NDA)
- Documents only distributed during meeting
- Members cannot removed documents from meeting room
- Documents are kept in a safety cabinet



No circulating of documents!



IP Management

**Patent before participation in
exhibitions/seminars
& publishing**

Protect the technology!





IP Management

Non disclosure agreement :-

- **Students**
- **Evaluators**

New guidelines!



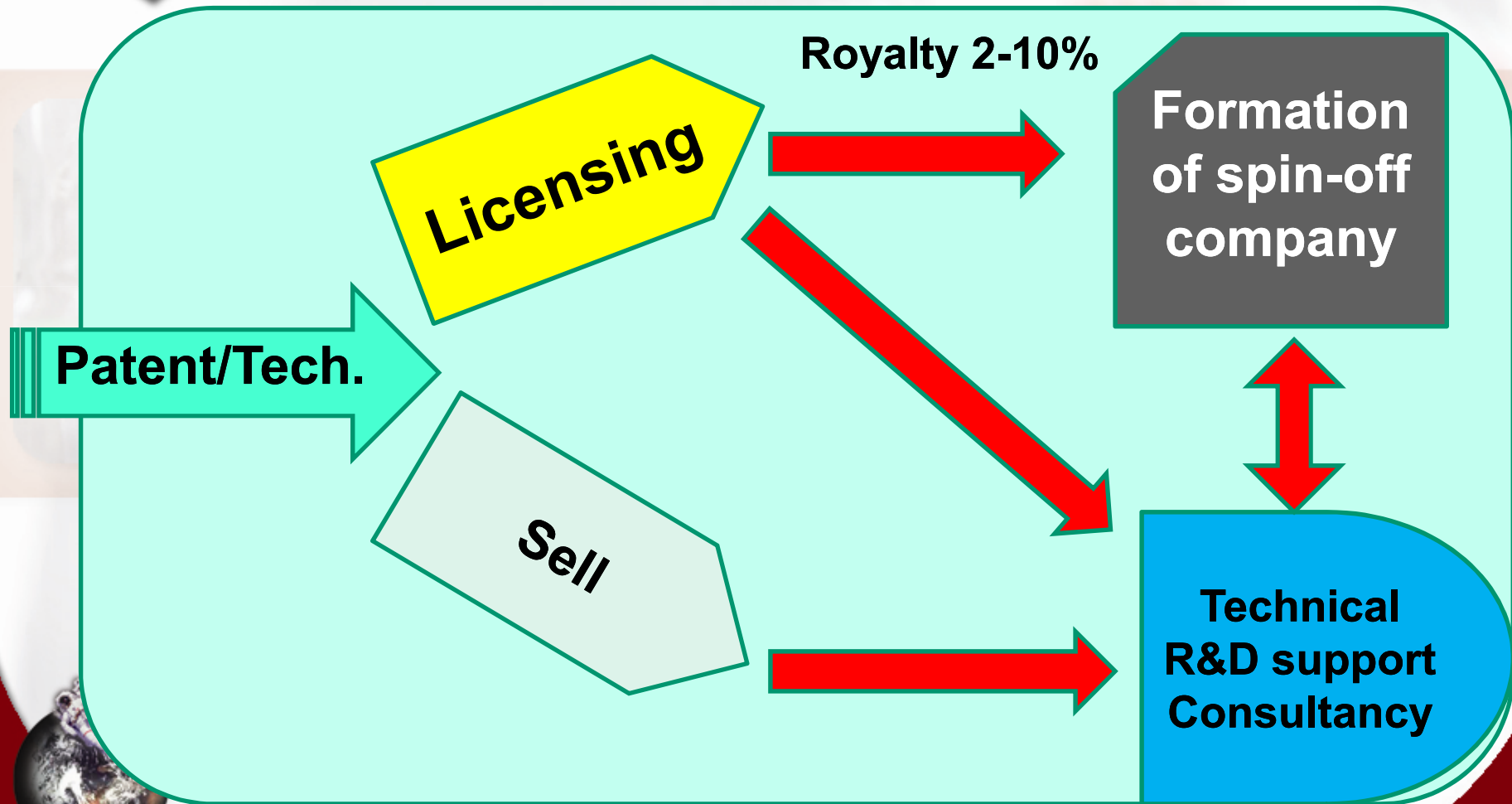


MODES FOR TECHNOLOGY TRANSFER





Modes : Technology Transfer





Equity in Spin-Off Company



Assist in getting funds for spin-off company



No financial contribution



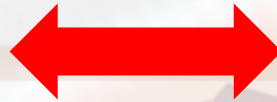
Contribution of expertise





Equity in Company

Sell or License



Consultancy

5-10% University Holdings

**10-40%
Researcher/Technical
director/Advisor**

40-70% Entrepreneur

Negotiable





Equity for researchers

- **Benchmark of success with researcher's involvement©**
- **Security for entrepreneur**
- **Sense of belonging for researcher – thus commitment**





UPM Equity for researchers

- **Constant renewing of technology – forefront in market**
- **Assurance of quality control of product in the market**





Distribution of Income

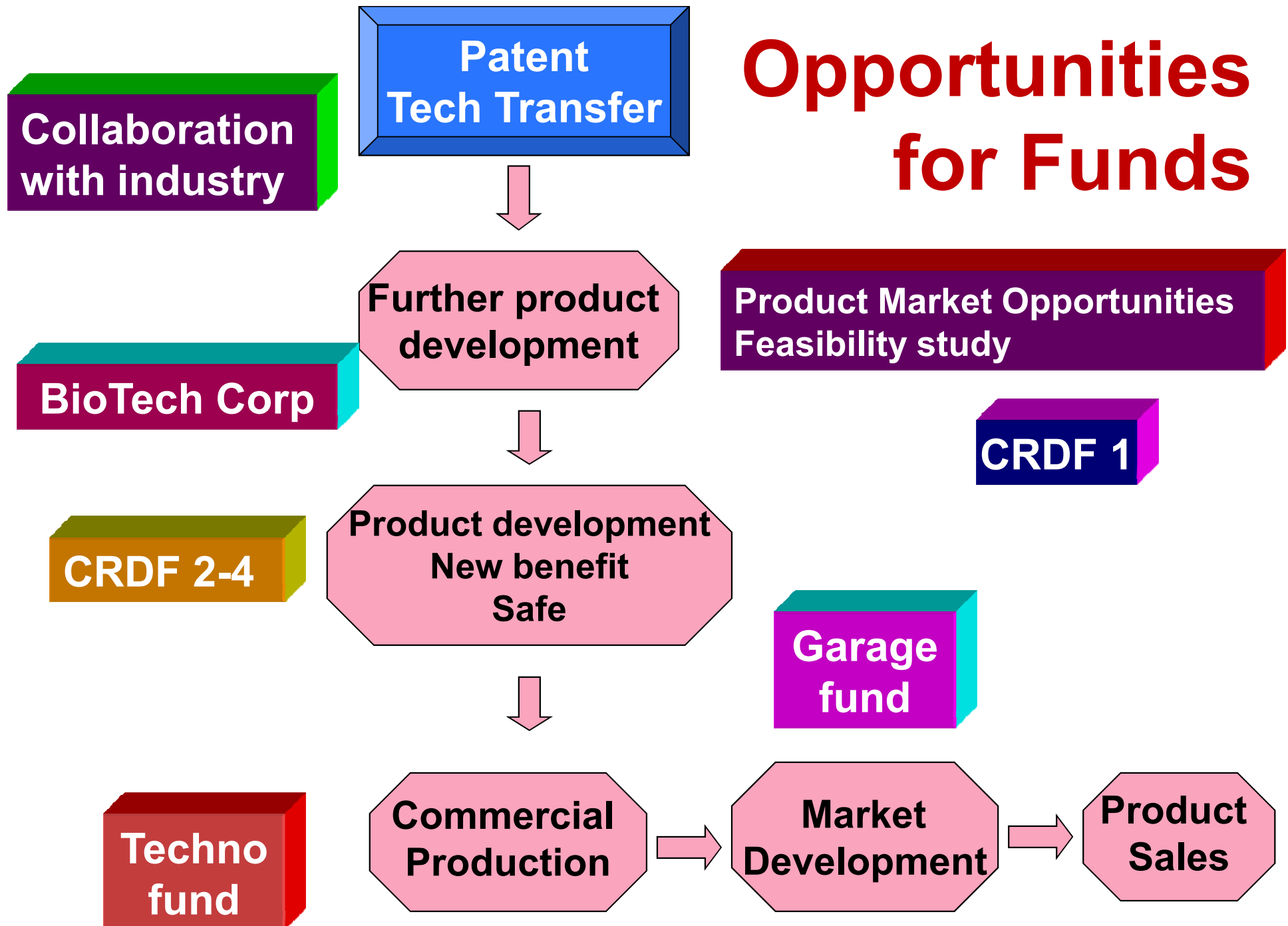
Distribution of income
generated from commercialisation

**Researcher/
Inventor
75%**

**University
25%**



Opportunities for Funds





CHALLENGES





Private sector's perception

**Private sector
skeptical of local
Technologies**





Work smart to win them

**Convince the industry
World class expertise & technologies**

**Win - Win situation =
smart partnership**





Importance of a right partner

- **Finding the right collaboration/ business partner is an important process**
- **Wrong partner can make life miserable**
- **Sometimes it worked so well that partners ended up getting married**





Going global

- ❖ Work with global partners
- ❖ Local market small & non sustainable





New culture & shy scientists

- ☐ The TT/ commercialization/ business is a new culture in University
- ☐ Scientists not aggressive in marketing themselves & their products





Slow



Approval from various levels

Legal

Management

**For private sector –
time is money**





Unclear policies



Unpredictable changes



New leaders – different vision

**Private sector – loses trust
with the institution**





Patent difficult to evaluate

Patent – non-tangible asset, evaluation is difficult

E.g.

- ❖ **1st offer RM200,000**
- ❖ **Final offer RM 4 million**
 - + 20% equity to researcher**
 - + 5% equity to UPM**
 - + Consultancy**



Right expertise to negotiate



Challenges

- ❖ **Disclosure of critical technology knowledge can induce misconduct**
- ❖ **Research is a long term commitment – return on investment is extended**

Scientist very found of telling everything to everybody!





Challenges on joint ownership

- ❖ IP ownership – joint research programs
- ❖ Depending on the contribution
 - Negotiate for full ownership
 - If joint 50:50 (if possible assigned to Univ. for commercialisation)

Sign non disclosure agreement (NDA)





Branding

- ❖ Promote the institution as the inventor
– increases credibility & reliability
- ❖ Create impact on customers
- ❖ Improve chance of getting venture capital
- ❖ Differentiate you from your competition





Nurturing clients

- ❖ Lab scale to market takes time to materialise (pilot scale)
- ❖ Close monitoring on progress
- ❖ Provide assistance when necessary
- ❖ Use of incubators & other facilities
- ❖ Assistance in seeking funds
- ❖ Provide guidance from expertise available on campus/institution

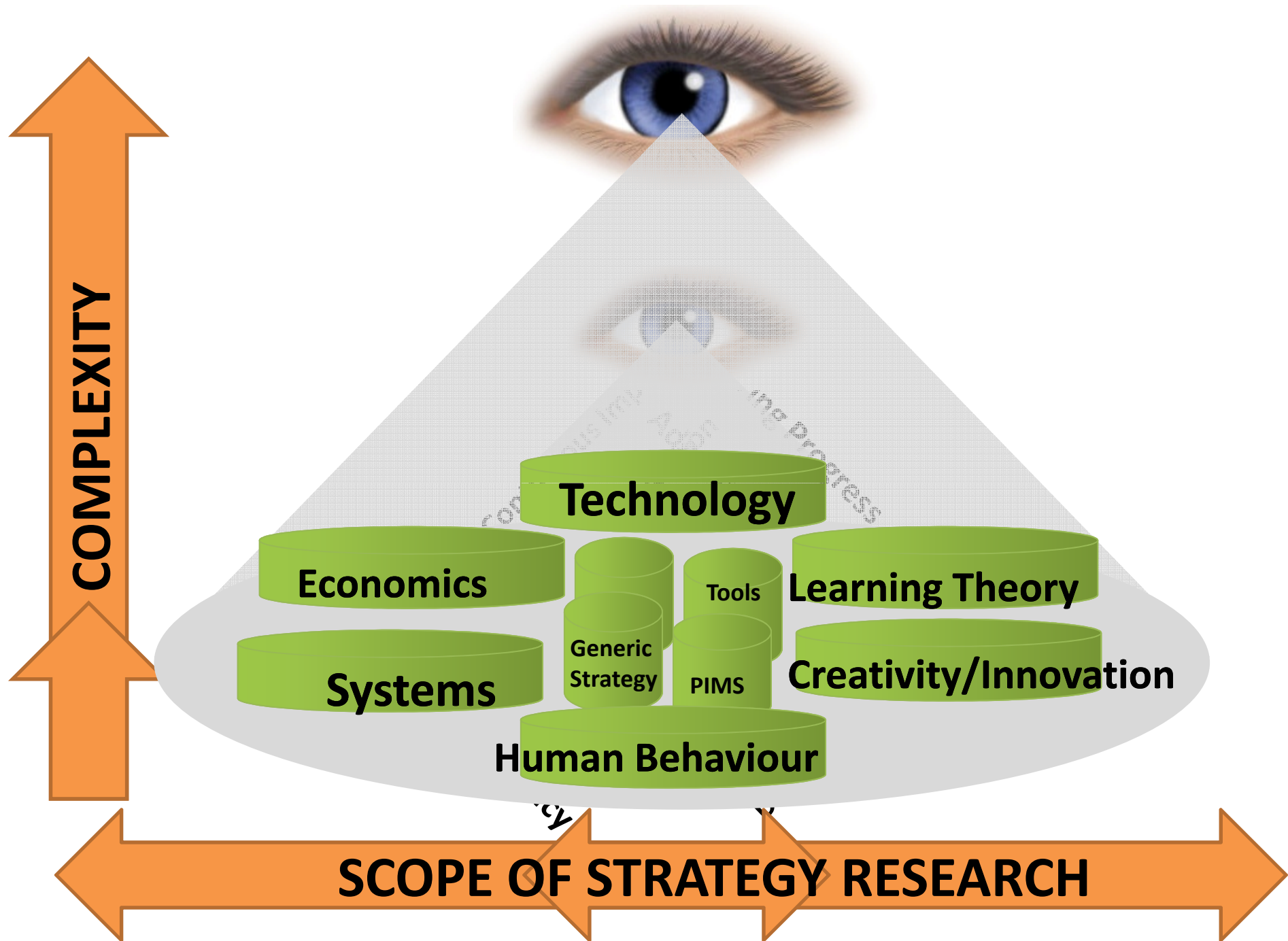




Strategies for Successful Commercialization

- ✓ Identify selected technologies for up-scaling
- ✓ Promotion & marketing activities
- ✓ Links with industries
- ✓ Evaluate possible investors
- ✓ Protection of IP rights
- ✓ Legal support e.g. ownership of IP & documentation







Arigatō
ありがとう

