FOSTERING COMMERCIALIZATION OF AGRICULTURAL TECHNOLOGY IN MALAYSIA

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FFTC-MARDI INTERNATIONAL WORKSHOP ON
EFFECTIVE IP PROTECTION AND COMMERCIALIZATION STRATEGIES
FOR AGRICULTURAL INNOVATION
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Food and Fertilizer Technology Center
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Malaysia R&D Activity Report

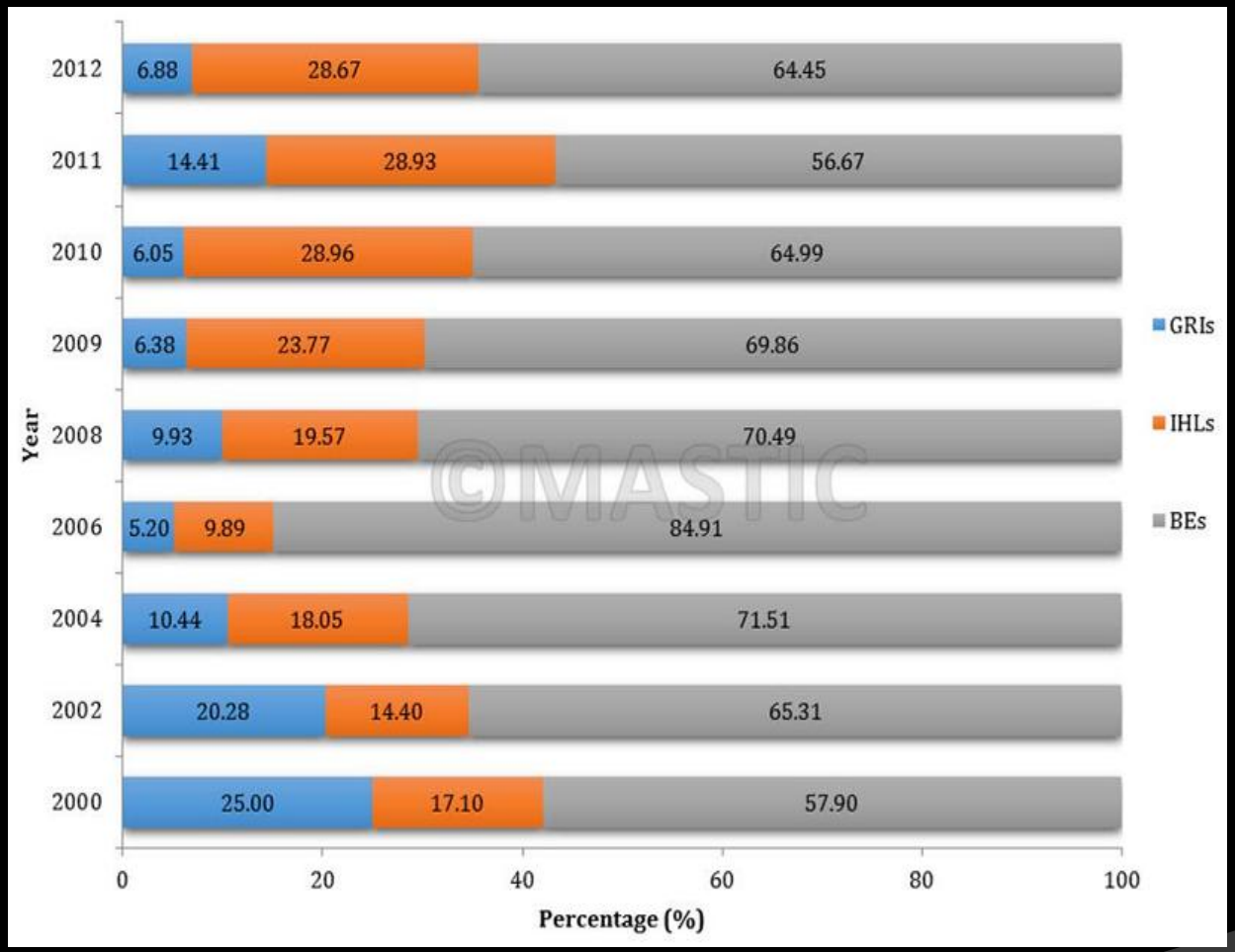


Fig. 1. R&D Expenses by Sectors for the year 2000 – 2012
Source: MASTIC (2012)

- The strengths of R&D activities in Malaysia can be viewed from the continuous growth in private sectors support for R&D.

- MASTIC survey 2012 has reported that R&D activities in Malaysia was driven by Private sector (Business entity), followed by Institution of Higher Learning (IHL) and lastly by Government Research Institute (GRI).

Malaysian Intensity of R&D

Malaysia has indicate significant continuous growth of intensity of R&D activity. On 2012, GERD/GDP was 1.13%, 43% increment compared to year 2008 (0.79%). And Malaysian GERD has reached RM 10,612.8 million increment of 74.8% compared to 2006 (RM 6,070.8 millions).

Technology Generated by Sectors

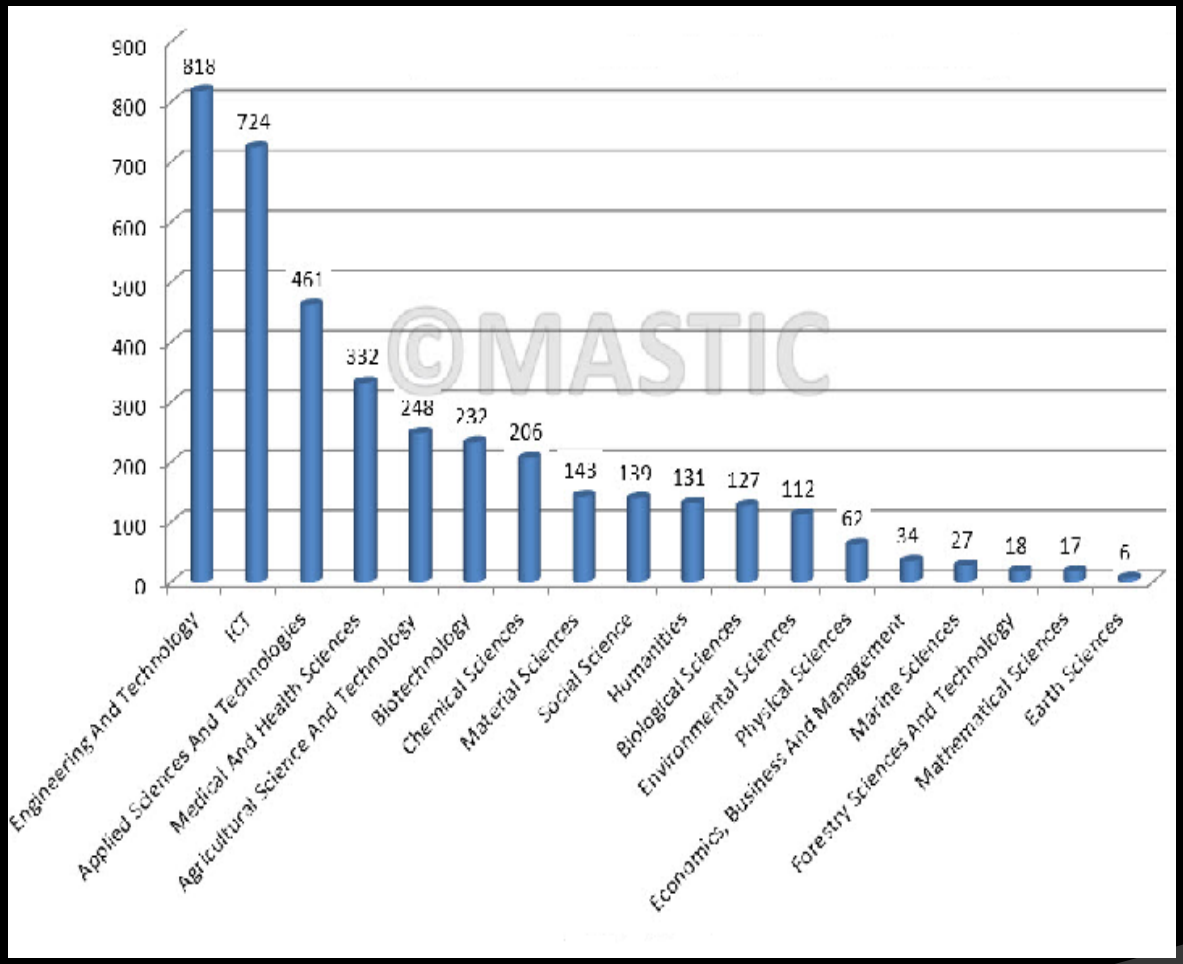


Fig. 3. Numbers of Product/ Technology Generated by Sectors
Source: MASTIC (2012)

- Agricultural sector continue to be among the major contributor to Malaysian's GDP growth comparable to Medical and Health Science and Biotechnology.

- Due to that, Malaysia government has allocated considerably high proportion of investment in agriculture sector compared to many other developing countries.

- Sharif et al. (2015) documented that in the year 2010, agricultural R&D investment was USD 174 million. Government spending on agricultural R&D has doubled since the 1980s.

Statistic Relates To Patent Application In Malaysia

YEAR	APPLICATION			GRANTED		
	Malaysia	Foreign	Total	Malaysia	Foreign	Total
1986	29	233	**262**	-	-	-
1987	71	3,195	**3,266**	-	-	-
1988	73	1,547	**1,620**	-	6	**6**
1989	84	1,803	**1,887**	11	121	**132**
1990	92	2,213	**2,305**	20	498	**518**
1991	106	2,321	**2,427**	29	1,021	**1,050**
1992	151	2,260	**2,411**	10	1,124	**1,134**
1993	198	2,684	**2,882**	14	1,270	**1,284**
1994	223	3,364	**3,587**	21	1,608	**1,629**
1995	185	3,992	**4,177**	29	1,724	**1,753**
1996	221	5,354	**5,575**	79	1,722	**1,801**
1997	179	6,278	**6,457**	52	741	**793**
1998	193	5,770	**5,963**	21	545	**566**
1999	218	5,624	**5,842**	39	683	**722**
2000	206	6,021	**6,227**	24	381	**405**
2001	271	5,663	**5,934**	18	1,452	**1,470**
2002	322	4,615	**4,937**	32	1,460	**1,492**
2003	376	4,686	**5,062**	31	1,547	**1,578**
2004	522	4,920	**5,442**	24	2,323	**2,347**
2005	522	5,764	**6,286**	37	2,471	**2,508**
2006	531	4,269	**4,800**	187	6,562	**6,749**
2007	670	1,702	**2,372**	338	6,645	**6,983**
2008	864	4,539	**5,403**	198	2,044	**2,242**
2009	1,234	4,503	**5,737**	270	3,198	**3,468**
2010	1,275	5,189	**6,464**	204	1,973	**2,177**
2011	1,136	5,423	**6,559**	335	2,057	**2,392**
2012	1,160	5,867	**7,027**	308	2,193	**2,501**
2013	1,269	6,081	**7,350**	305	2,386	**2,691**
2014	1,439	6,321	**7,760**	381	2,381	**2,762**
2015	1,375	6,532	**7,907**	360	2,548	**2,908**
MAY 2016	483	2,533	**3,016**	114	1,196	**1,310**
TOTAL	**15,678**	**131,266**	**146,944**	**3,491**	**53,880**	**57,371**

- Indicates the domination of foreign patent application in Malaysia.
- However the ratio of Malaysia vs Foreign application significantly closer by years.
- As for year 2000, the ratio is 1:29, year 2005 the ratio is 1:11, year 2010 the ratio is 1:4. However year 2015 the ratio was slightly increase to 1:4.7

Global Innovation Index (GII 2011 – 2015)

Country / Economy	Income	2015		2014		2013		2012		2011	
		Rank	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-100)	Rank	Score (0-10)	Rank	Score (0-10)
Switzerland	HI	1	68.30	1	64.78	1	66.59	1	68.20	1	63.82
United Kingdom	HI	2	62.42	2	62.37	3	61.25	5	61.20	10	55.96
Sweden	HI	3	62.40	3	62.29	2	61.36	2	64.80	2	62.12
Netherlands	HI	4	61.58	5	60.59	4	61.14	6	60.50	9	56.31
USA	HI	5	60.10	6	60.09	5	60.31	10	57.70	7	56.57
Finland	HI	6	59.97	4	60.67	6	59.51	4	61.80	5	57.50
Singapore	HI	7	59.36	7	59.24	8	59.41	3	63.50	3	59.64
Denmark	HI	10	57.70	8	57.52	9	58.34	7	59.90	6	56.96
Hong Kong (SAR)	HI	11	57.23	10	56.82	7	59.43	8	58.70	4	58.80
Spain	HI	27	49.07	27	49.27	26	49.41	29	47.20	32	43.81
Slovenia	HI	28	48.49	28	47.23	30	47.32	26	49.90	30	45.07
China	UM	29	47.47	29	46.57	35	44.66	34	45.40	29	46.43
Portugal	HI	30	46.61	32	45.63	34	45.10	35	45.30	33	42.40
Malaysia	**UM**	**32**	**45.98**	**33**	**45.60**	**32**	**46.92**	**32**	**45.90**	**31**	**44.05**
Cyprus	HI	34	43.51	30	45.82	27	49.32	28	47.90	28	46.45

Notes: HI - high income, UM-upper middle, LM-lower middle
: Ranking over 141 countries (2015); 143 countries (2014); 142 countries (2013); 141 countries (2012); 125 countries (2011)

Global Competitiveness Index (2015 – 2016)

2015-2016		2014-2015		2013-2014		2012-2013		2011-2012	
Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
1	5.76	1	5.70	1	5.67	1	5.72	1	5.74
2	5.68	2	5.65	2	5.61	2	5.67	2	5.63
3	5.61	3	5.54	5	5.48	7	5.47	5	5.43
6	5.47	6	5.47	9	5.40	10	5.40	9	5.40
10	5.43	9	5.41	10	5.37	8	5.45	10	5.39
18	**5.23**	**20**	**5.16**	**24**	**5.03**	**25**	**5.06**	**21**	**5.08**
21	5.15	22	5.08	21	5.09	20	5.12	20	5.11
25	5.07	24	5.06	20	5.10	18	5.19	17	5.17
28	4.89	28	4.89	29	4.84	29	4.83	26	4.90
32	4.64	31	4.66	37	4.54	38	4.52	39	4.52
37	4.52	34	4.57	38	4.53	50	4.40	46	4.38

Global Competitiveness Report 2015 – 2016
Notes: Contries involved 140 (2015-2016); 144 (2014-2015); 148 (2013-2014); 144 (2012-2013); 142 (2011-2012)

Government Initiatives

- Utilization of cutting edge technology such as Internet of Things (IoT), Big Data Analysis
- Various start-up fund (minimum requirements)
- National Business Opportunity Activities (AIM)
- National IP Valuation Initiative
- Malaysia Commercialization Year 2016 (MCY 2016)

Related Policies and Guidelines

- Is clear technology generation and management policies and guidelines exist?

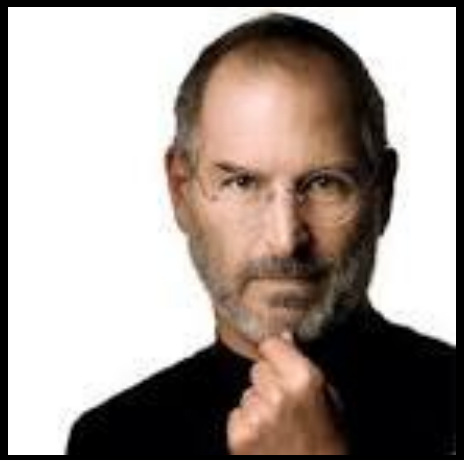
- Policy on…
  - R&D Management
  - IP Management
  - Technology Commercialization Management

Innovation Management Policy

Philosophy on Research category

Type of research	Basic/ Elementary	Future	Applied	Product refinement/End product
Research term	Long/Middle	Long	Middle/Short	Short
Fund allocation	Moderate	Infinite	Moderate	Small
Expected output	No	Low	Moderate	Definite
Potential IP generated	Low	Low	Intermediate/High	Intermediate
Commercialization Potential	No	Low	Intermediate/High	Intermediate/High

- R  r
- d  D



Lesson learned from Mr. Jobs…

- Leads LISA Project (Local Integrated System Architecture) – first GUI home PC
  - staff segregation, sufficient fund

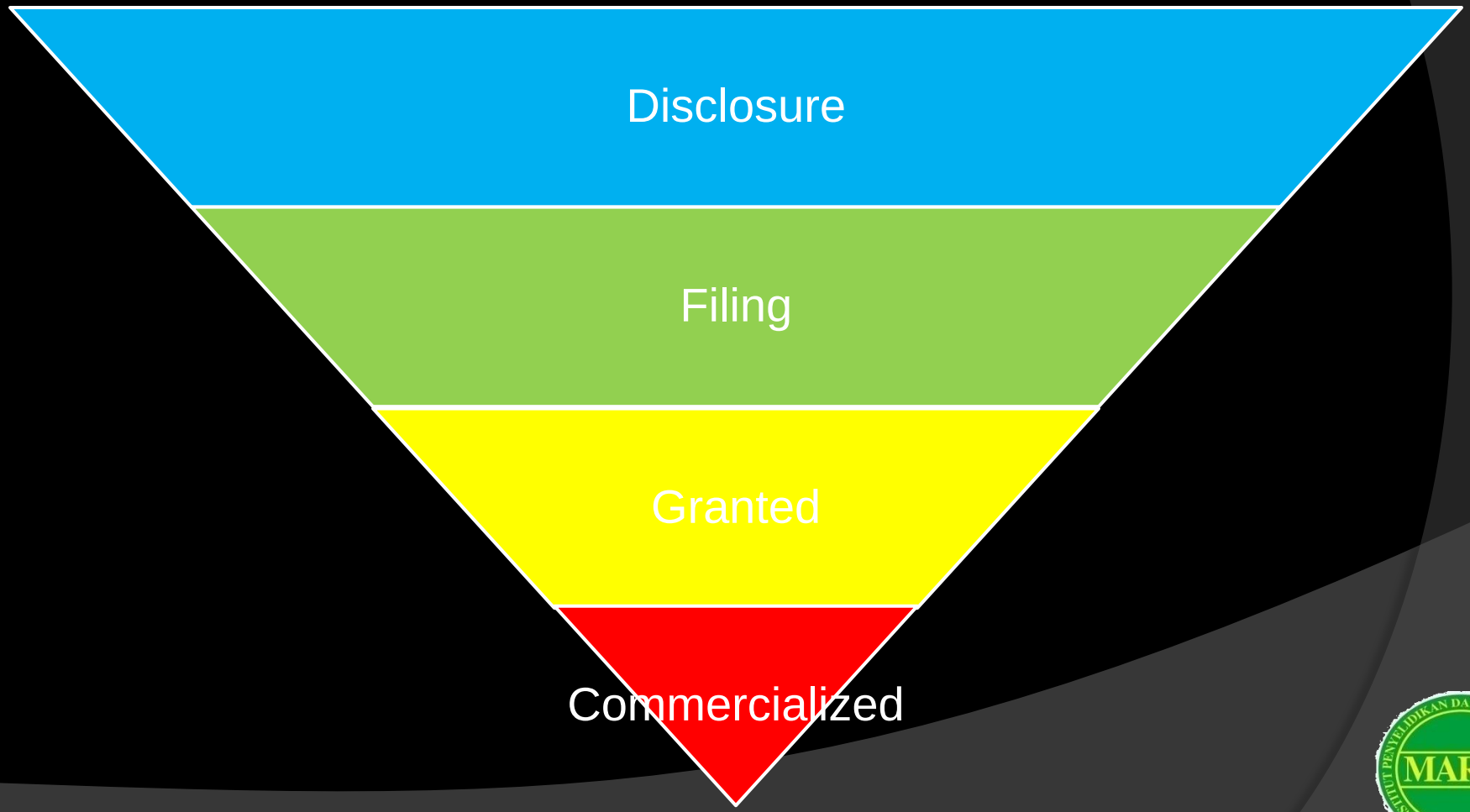
Setting up KPIs

- KPI will reflect the success or failure of an organization on particular activity in which it is engaged (and for this case in technology management/ commercial output).

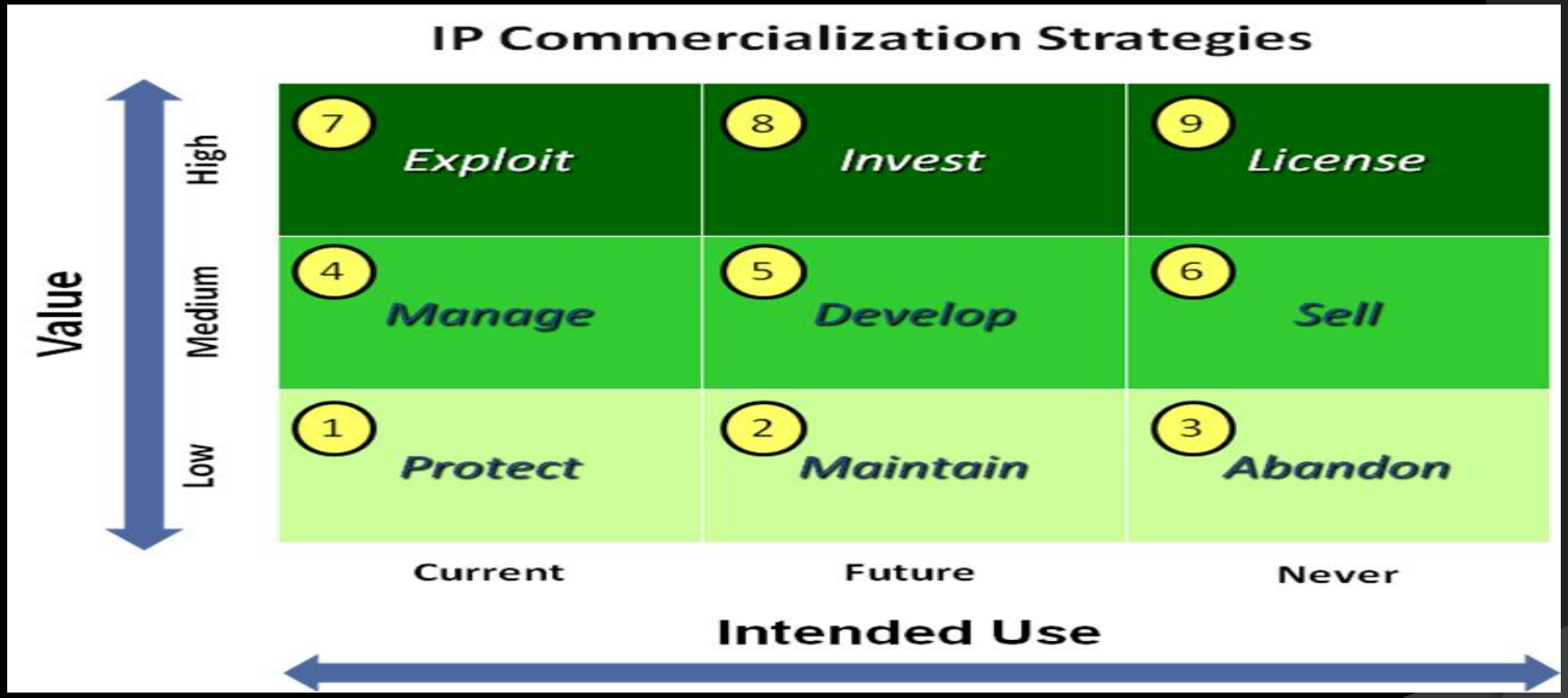
- Bare in mind that the KPIs to be set shall follow "***SMART*** rule", whereby the KPIs must be **Specific, Measurable, Achievable, Realistic and Time related.**

Philosophy on IP Management Policy

For instance: KPI on IP management



Philosophy on Commercialization

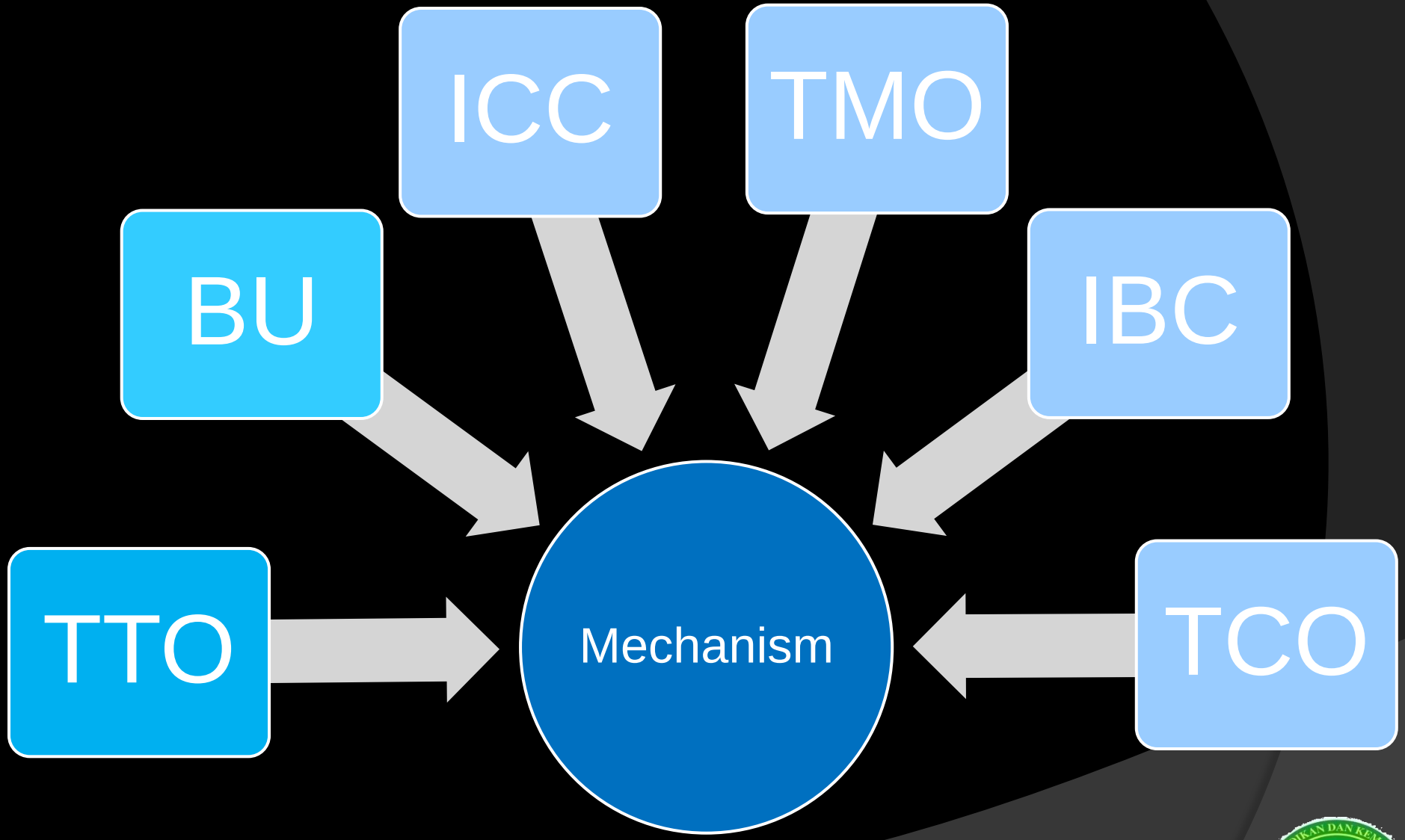


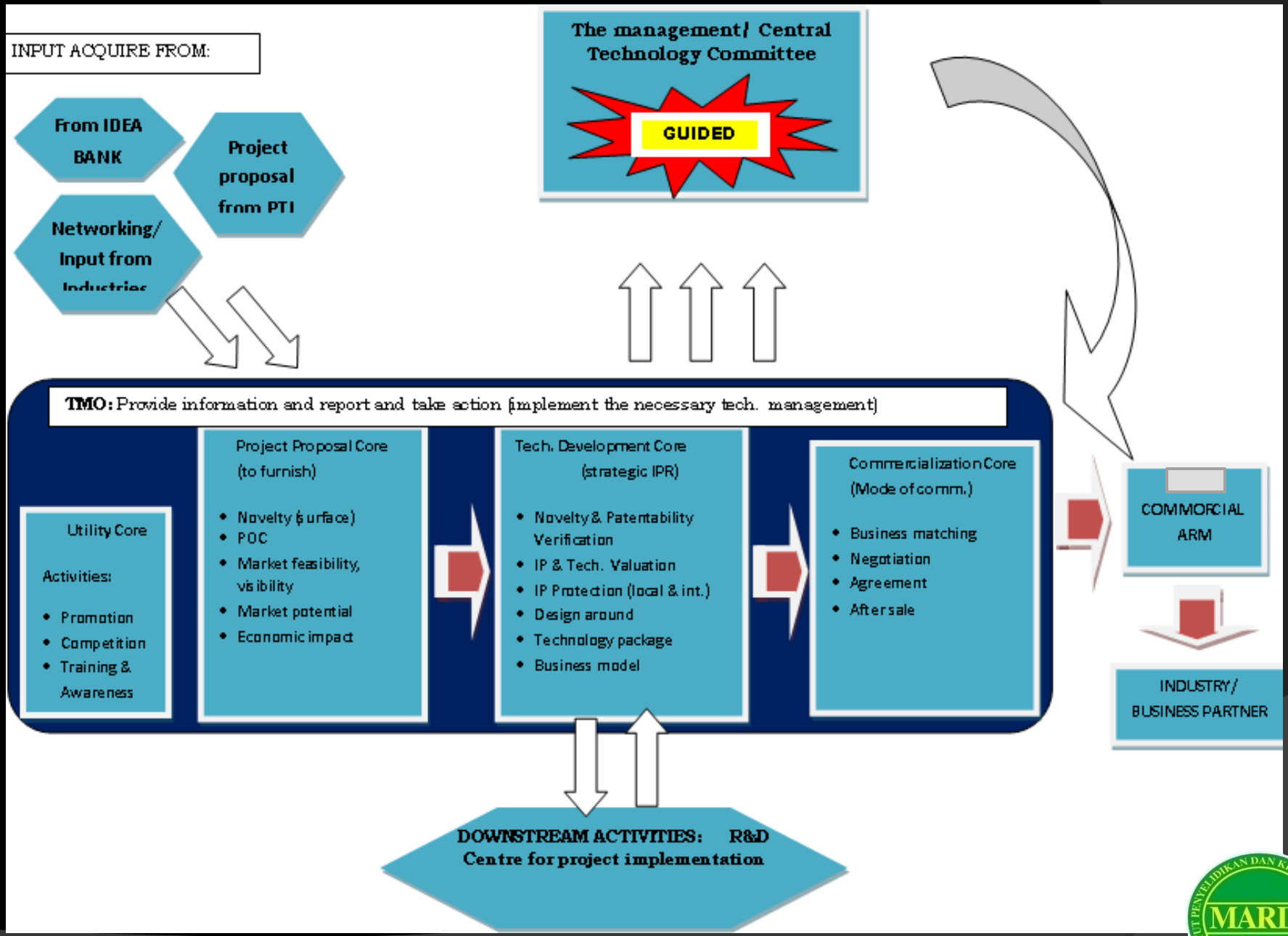
- Product push vs Demand pull

Element 1: Comprehensive Policies

- By having full understanding and enlighten by said philosophies, an organization may publish comprehensive related policies.

- Thus proper R&D planning on research categories focus centric, staff, budgetary, resources and so on can be done.


ICC
TMO
BU
IBC
TTO
Mechanism
TCO


INPUT ACQUIRE FROM:
From IDEA BANK
Project proposal from PTI
Networking/ Input from Industries
The management/ Central Technology Committee
GUIDED
TMO: Provide information and report and take action (implement the necessary tech. management)
Utility Core
Activities:
Promotion
Competition
Training & Awareness
Project Proposal Core
(to furnish)
Novelty (surface)
POC
Market feasibility, visibility
Market potential
Economic impact
Tech. Development Core
(strategic IPR)
Novelty & Patentability Verification
IP & Tech. Valuation
IP Protection (local & int.)
Design around
Technology package
Business model
Commercialization Core
(Mode of comm.)
Business matching
Negotiation
Agreement
After sale
COMMORCIAL ARM
INDUSTRY/ BUSINESS PARTNER
DOWNSTREAM ACTIVITIES: R&D
Centre for project implementation

Competence and Adequate Stuff

- **Softskills required:**
  - IP Personnel cum technologist (Various field of technology)
  - Marketers
  - Business Analyst
  - Technoprenour Personnel
  - Legal Advisor

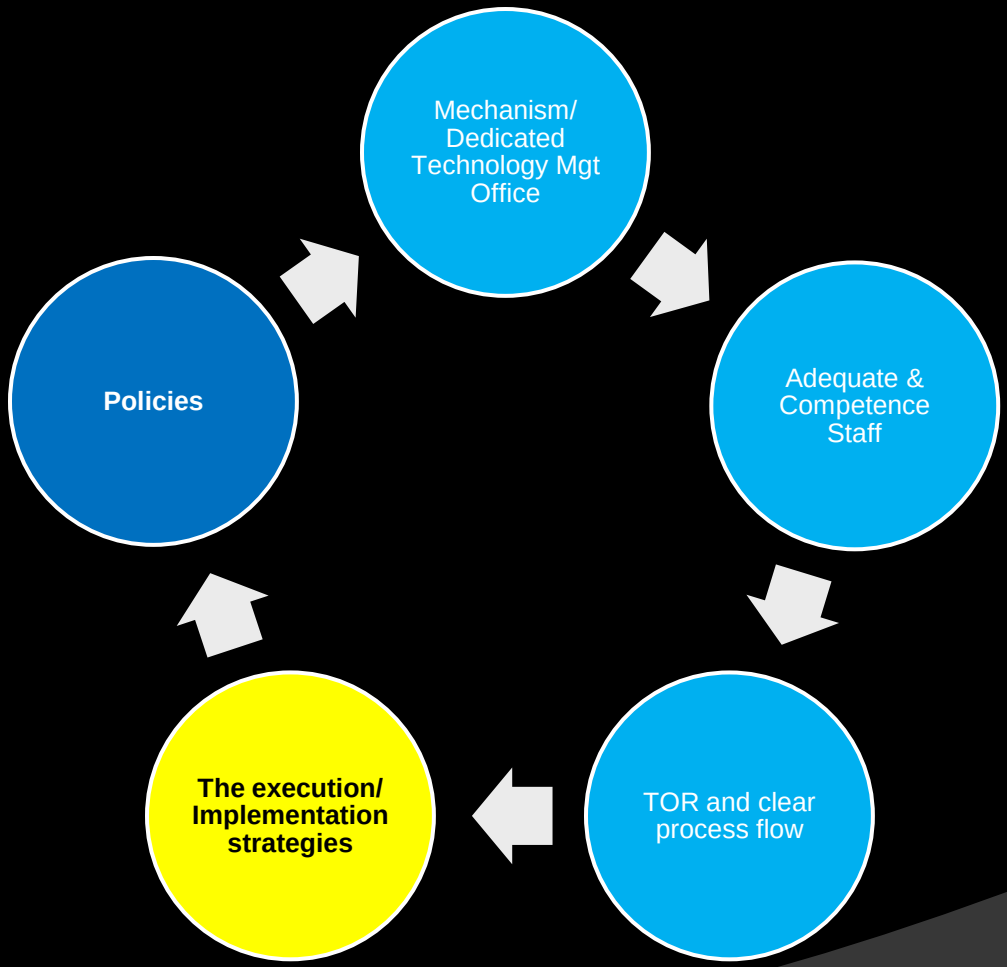
Dedicated negotiation team

- **Main activity**
  - Novelty and patentability verification
  - IP valuation
  - POC
  - Project feasibility study
  - Market visibility/ market acceptance study
  - Economic impact
  - Technology valuation
  - Business plan/ model proposition
  - Business matching
  - Negotiation
  - Seal commercial agreement

The mechanism

- **Strong Human Capital**
  R&D, IP personnel cum Technologist, Marketers, Business, Legal
- **Responsible to manage technology development**
  Ideation – Protection – Valuation – Commercialization – Infringement Activity
- **Aftersale: infringement, legal action**
- **Business intelligent + Oriented technology development Guided R&D base on Market driven**

Element 2: The Mechanism



Element 3: Implementation Strategies

- Technology Generation Phase
- IP Management Phase
- Commercialization Management Phase.

Implementation Phase

Technology Generation Phase (Ideation – Project Proposal – Project Development)

IP Management Phase (Project Completion)

Commercialization Management Phase (Commercialization – After sale)

Technology Generation Phase: Tips & Trick

- Strong intelligent assessment on project proposal prior to submission
  - Inclusive of:
    - Novelty and patentability verification, POC, Project feasibility, Market visibility/ market acceptance, Economic impact
- Ownership (joint research, under study leave research)
- Inventorship & % of contribution

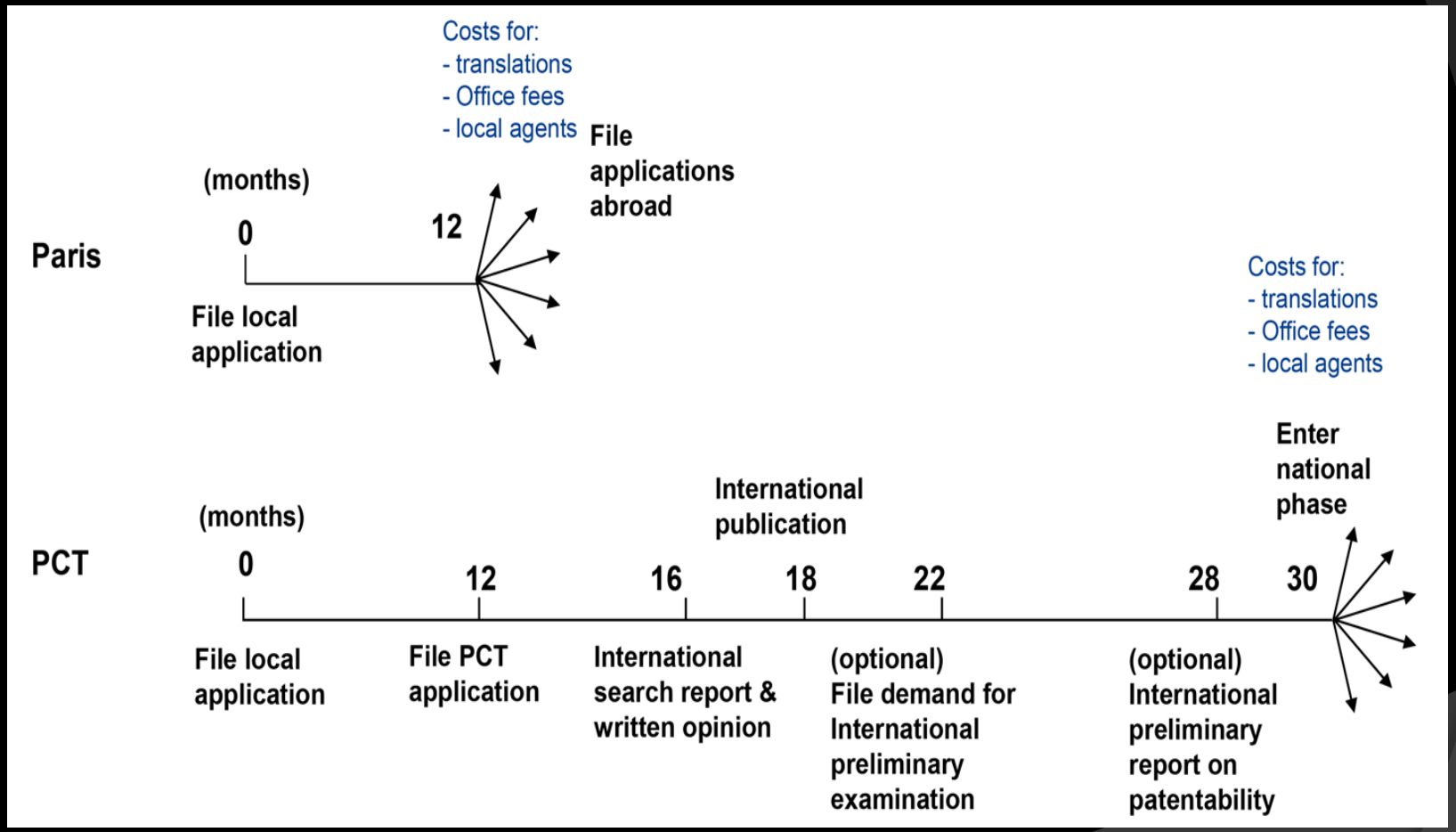
Technology Generation Phase: Do(s)/Don't(s)

- Confidential information management
- Record/ log book

IP Management Phase: Do(s)/Don't(s)

- Clear Process flow of tech management
- Internal declaration
- Conceived idea, once have to identify the best mode of application and protection

IP Management Phase: International patent application roots



IP Management Phase: Tips & Trick

- Budget allocation
- Is there any potential infringement activity to be occurred?
- Is there a power of monitoring and control?
- What, when & where to file?
- To patent vs to padlock
- Is the product is easily to be reverse-engineered?
- Consider a trade secret! , or
- Publication!! CSR and claiming moral right!!

Commercialization Management Phase: Do(s)/Don't(s)

- IMPORTANT!! Pre-determine technology valuation and package prior negotiation
- Due diligence on company's profile
- NDA and CIA
- Awareness on government policies, political and economic stability, available IPR - International company
- After sale services and legal support!!

Commercialization Management Phase: Tips & Trick

- Outright sale vs Licensing vs Distributorship & Contract manufacturing (OEM)
- Product push (idea bank, manageable fund, attractive product)
- Demand pull (Sensitive, Wide networking, competitive personnels, promissing deliverable)
- Offensive approach (force buying), Defensive approach, Butter Trade approach, Complement approach (part to complete)

Way to nurturing commercialization of technology

- Clear Policy
- Clear SOP
- Proper mechanism
- Competent staff
- Proper planning
- Best strategy and approach

SYNERGY

Elements Nuturing Technology Commecialization