

Importance of Patents in the Scientific World



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Patents as one of the Main Drivers of Scientific Development

“

That reminds me to remark, in passing, that the very first official thing I did, in my administration – and it was on the very first day of it, too – was to start a patent office; for I knew that **a country without a patent office and good patent laws was just a crab**, and couldn't travel any way but sideways or backwards

”

Mark Twain, 1889

A Connecticut Yankee in King Arthur's Court

John Locke and the Grant in Common

John Locke viewed all property as a grant in common from God that must be worked.

Only novel ideas can have value as intellectual labour.

Only the efforts of labour deserve protection, so only novel ideas can be protected.

Islamic Philosophy focuses on the benefits of labour to mankind rather than the individual.



Patents and Development

Patents represent a substantial investment into R&D and therefore are indicative not only of a country's willingness to invest but also its capacity to invest, its development and academic infrastructure, and also its economic potential.

Economic Potential

Countries which invest more into R&D generally have more substantial economies.

Development Indicators

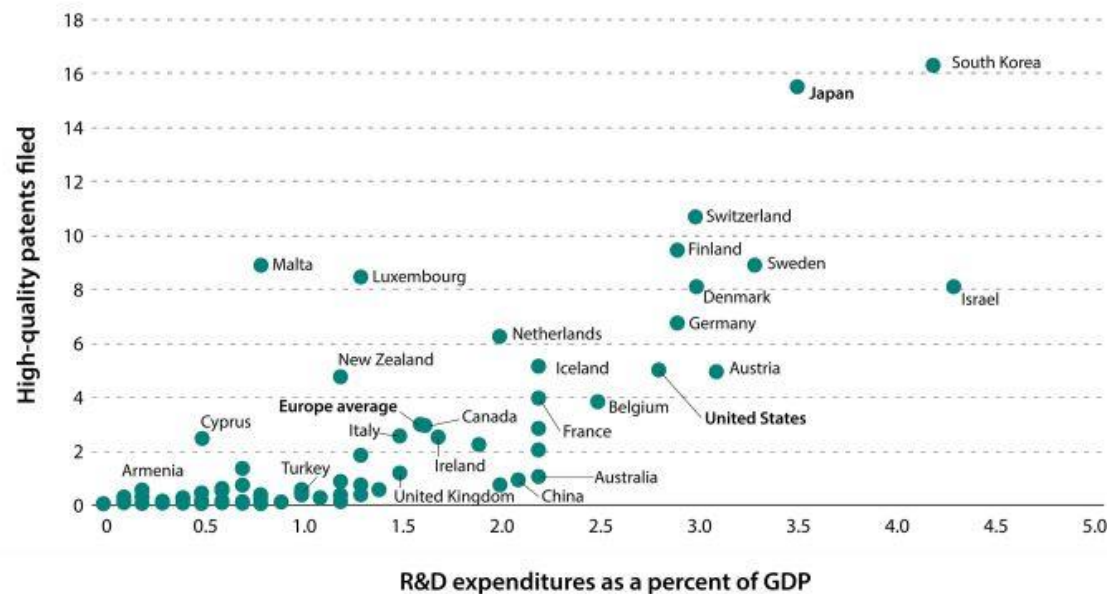
Patent output can also serve as a proxy for development in a country.



Patents and Development

Patents also drive economic growth in a country. They are valuable indicators of not only the country's willingness to invest in R&D but also the country's capacity to invest. And by proxy, they are an indicator of the market players' capacity and willingness to invest both locally and internationally.

FIGURE 3.
Total R&D Expenditures and High-Quality Patents Filed, by Country



Source: Dutta, Lanvin, and Wunsch-Vincent 2017.

Note: R&D data are for 2015, patent data are for 2013. "Europe average" is for European Patent Office member states; it excludes Liechtenstein, Monaco, and San Marino (data not available). High-quality patents are defined as patent families (sets of patents in multiple countries to protect a single invention) filed in at least two offices, reported per billion dollars of PPP-adjusted GDP.

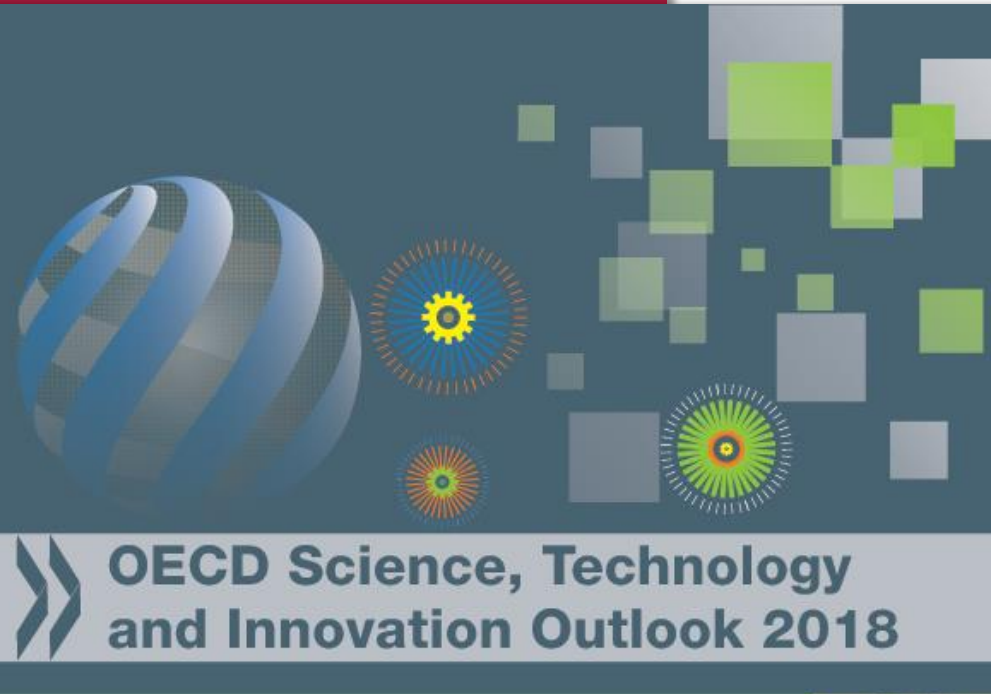
THE
HAMILTON
PROJECT
BROOKINGS

The Global Competitiveness Report 2019

Klaus Schwab, World Economic Forum

Patent Cooperation Treaty Yearly Review 2018

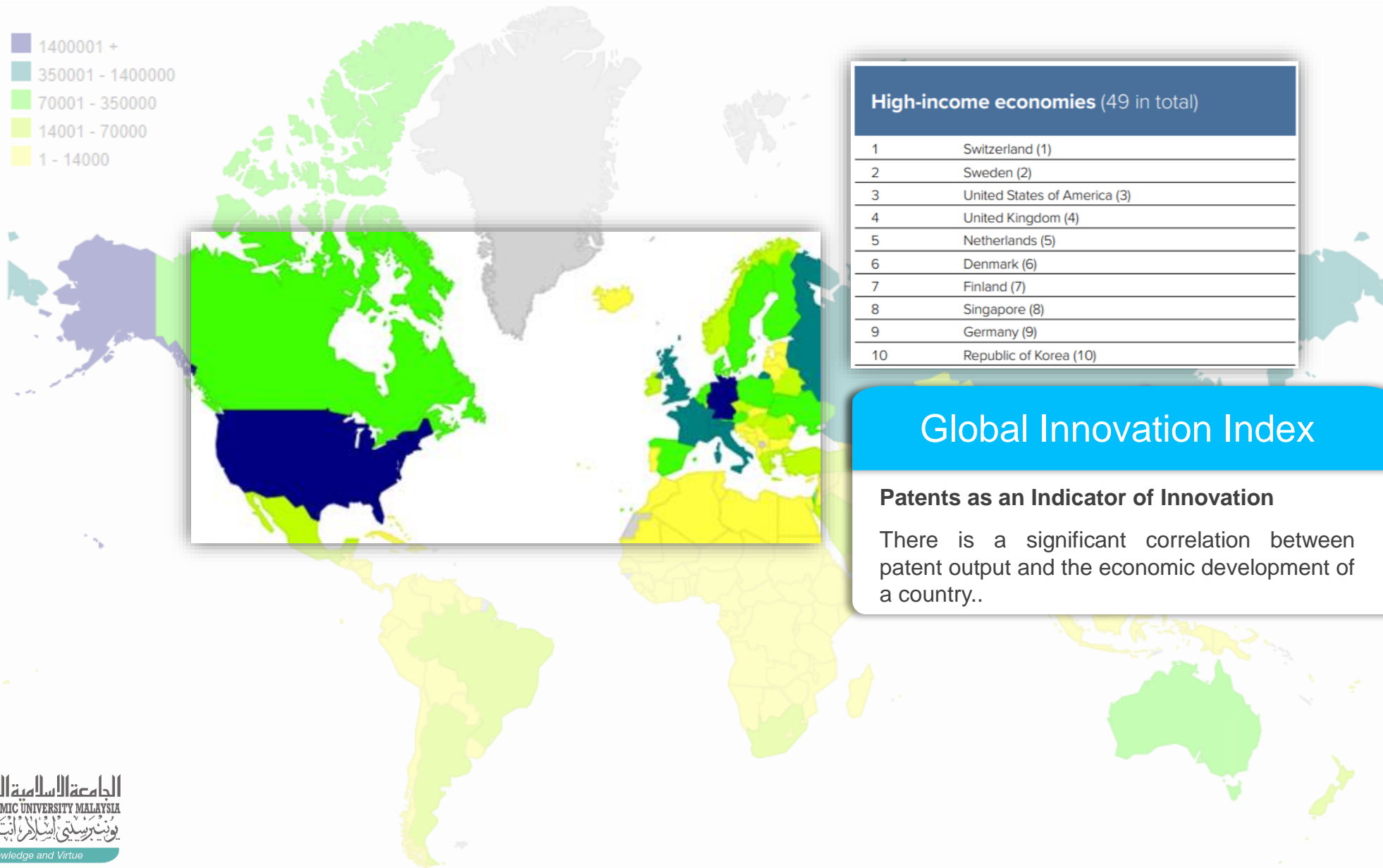
The International Patent System



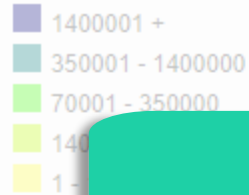
Patents as Development Indicators

The value of patent statistics as a development indicator has resulted in numerous indices which record patent statistics and the technological output of countries. Through these statistics, the technological output, level of competitiveness or innovation, and development of a country may be derived.

Patents and National Innovation



Patents and National Innovation



Global Innovation Index

Asia on the Rise

China, Malaysia, and Thailand rank in the top of Upper Middle-Income Economies and Vietnam, India and the Philippines ranking similarly in the top of the Lower middle-income economies.

China, Japan, and South Korea are also among the countries with the highest patent outputs in the world.

Upper middle-income economies (37 in total)

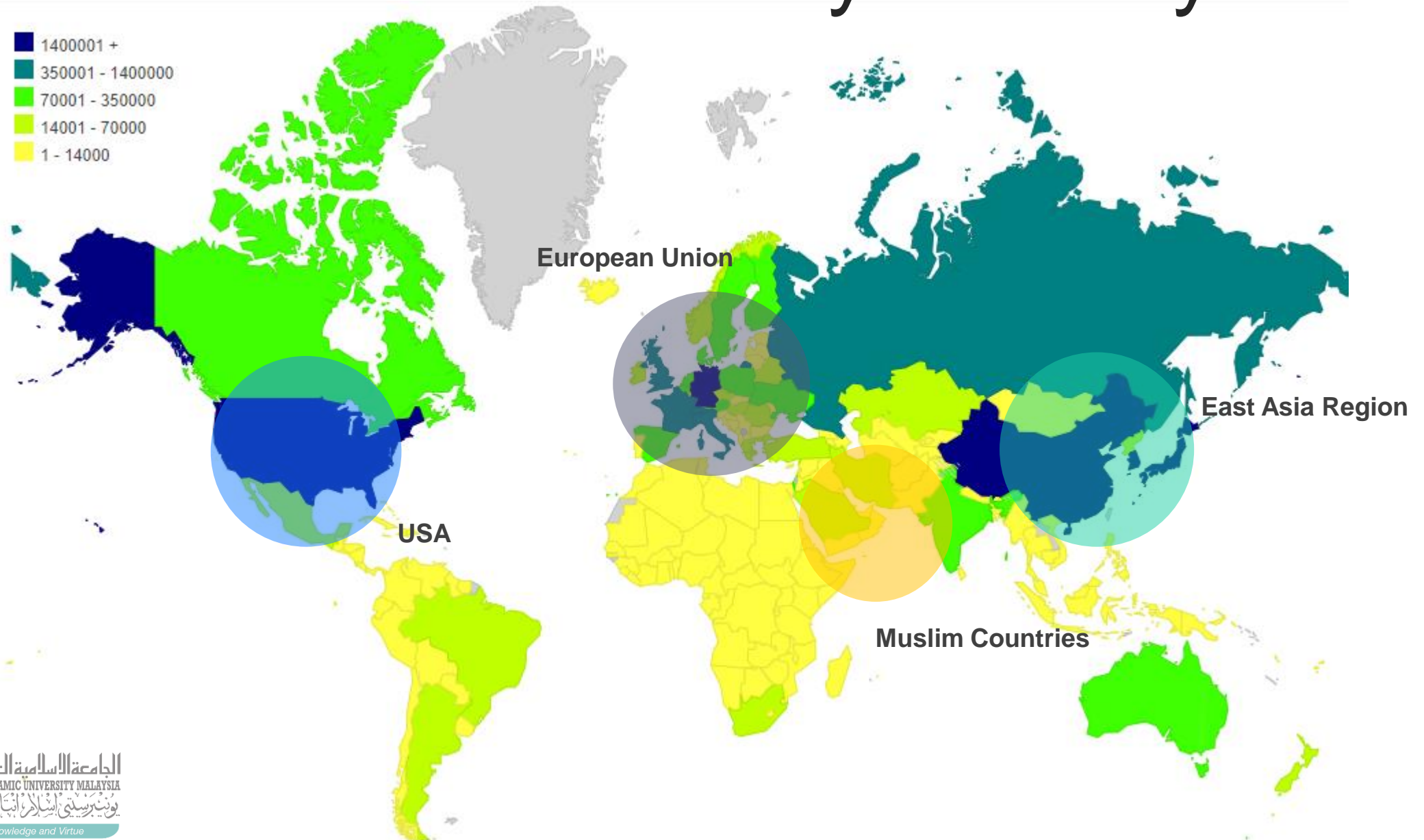
1	China (14)
2	Malaysia (33)
3	Bulgaria (37)
4	Thailand (44)
5	Romania (46)
6	Russian Federation (47)
7	Montenegro (49)
8	Turkey (51)
9	Mauritius (52)
10	Serbia (53)

Lower middle-income economies (29 in total)

1	Viet Nam (42)
2	Ukraine (45)
3	India (48)
4	Philippines (50)
5	Mongolia (58)
6	Republic of Moldova (59)
7	Tunisia (65)
8	Morocco (75)
9	Indonesia (85)
10	Kenya (86)

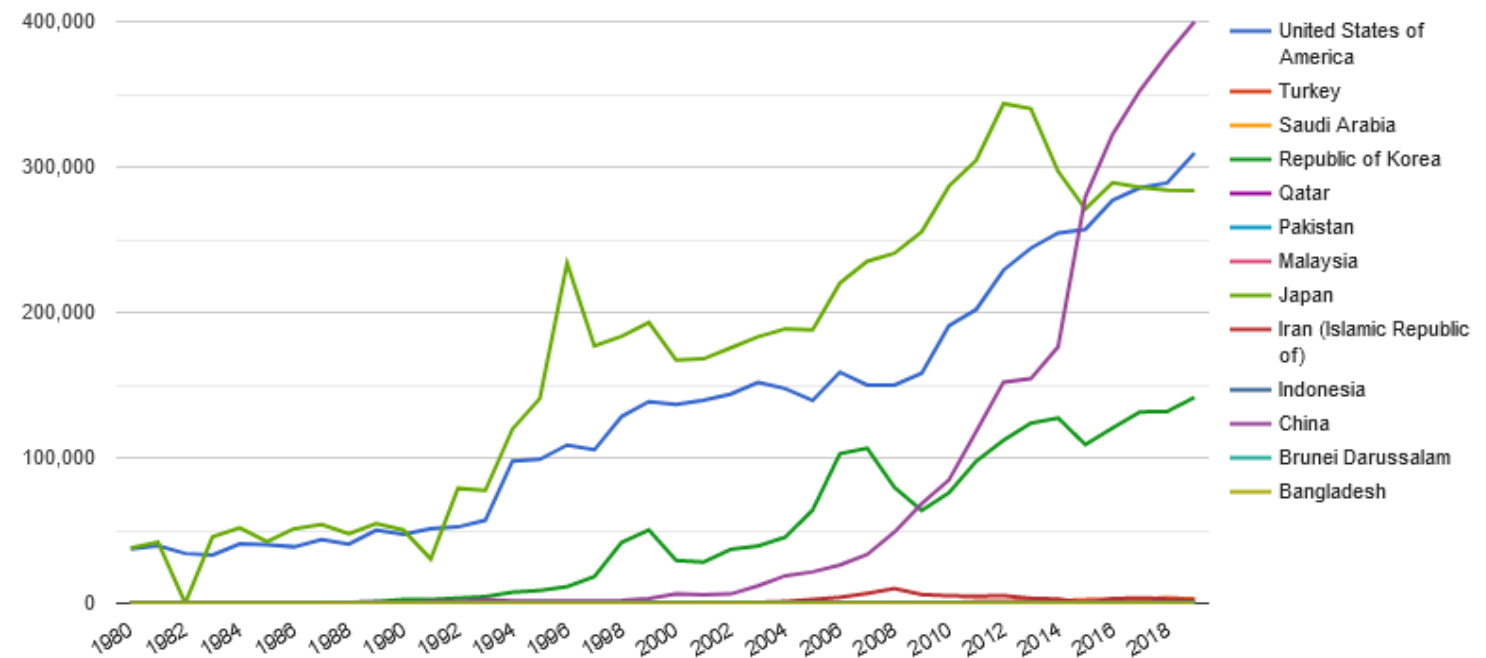


Patent Grants by Country



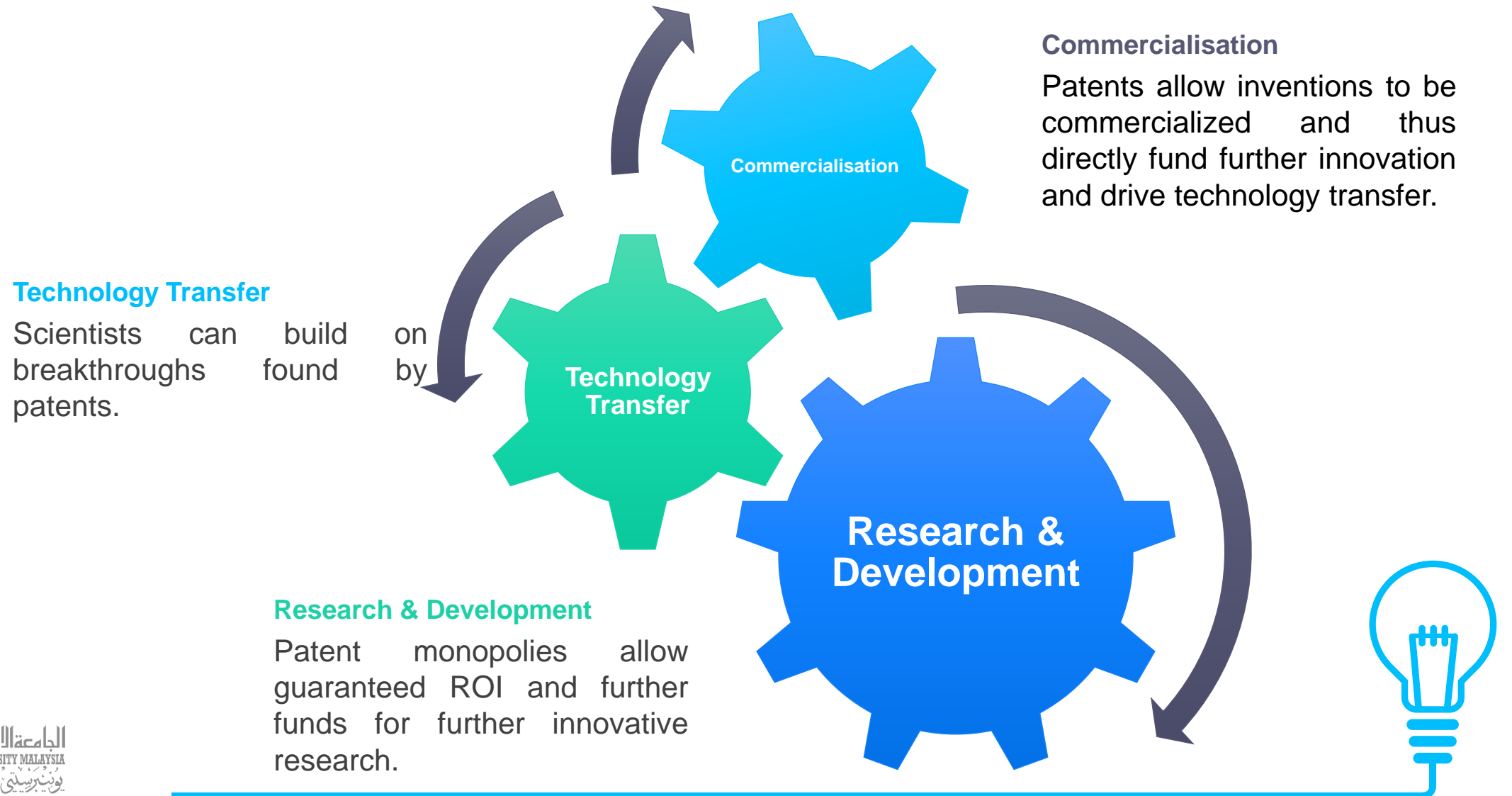
Patent Statistics in the Muslim World

The Muslim world is lagging behind in patents. Most patents are produced by Europe, USA and East Asia.



Patent Grants by Country / Region

Role of **Patents** in the **Scientific World**



The shifting role of **Scientists and Universities**

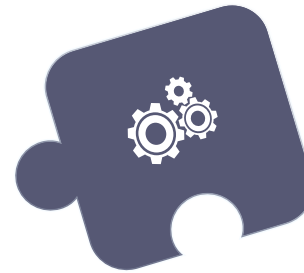
Shifting Role

The IP landscape should also be viewed in the context of the shifting role of scientists and universities **away from for-profit-based research but towards research for the public good.**



Research, Development, & Commercialisation

Patents should be geared towards **commercialisation of useful products** for the public good.



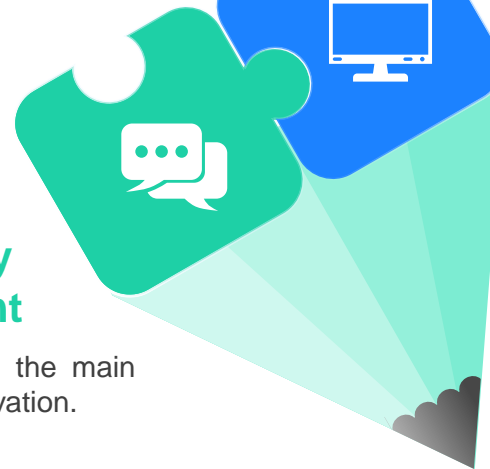
Skilled manpower

Skilled researchers and teachers.



Community Engagement

The public will be the main beneficiary of innovation.



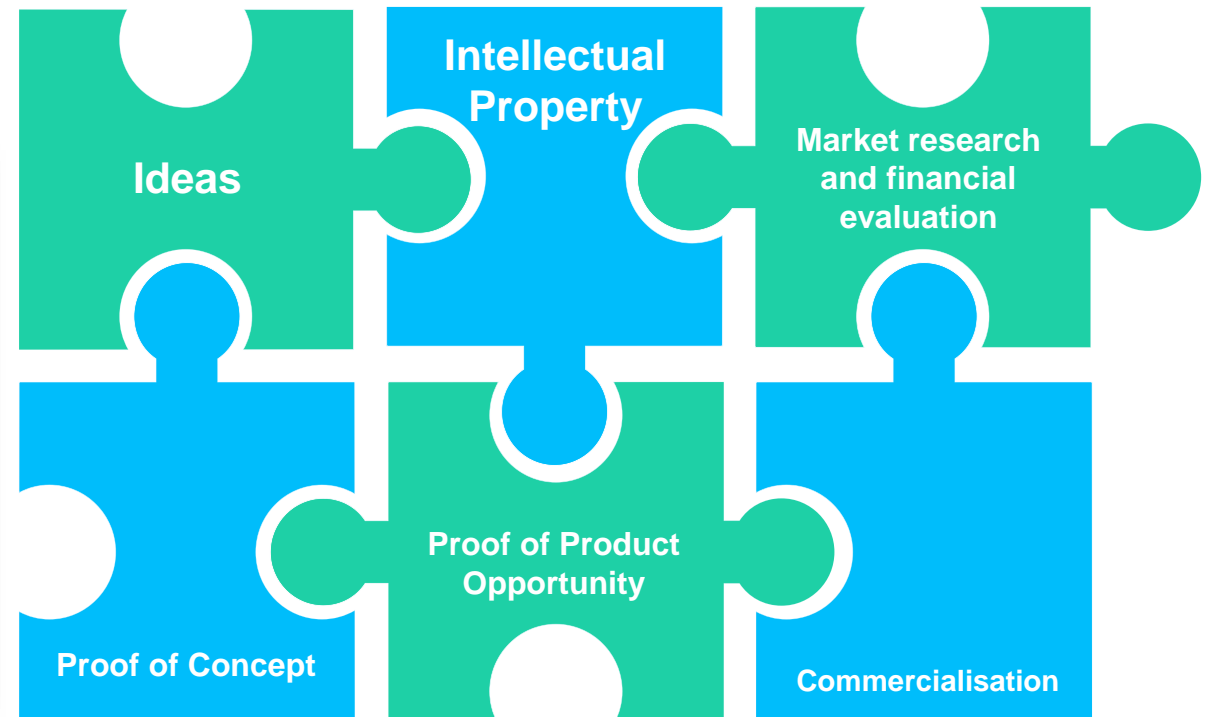
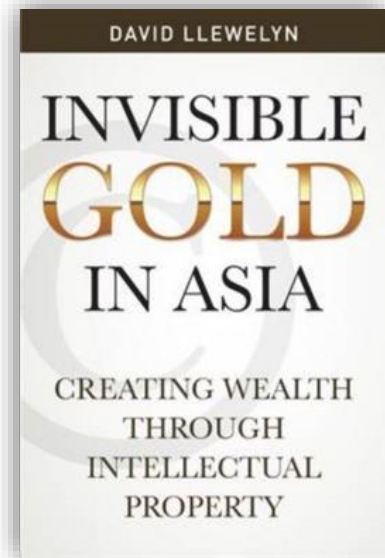
The Public Good



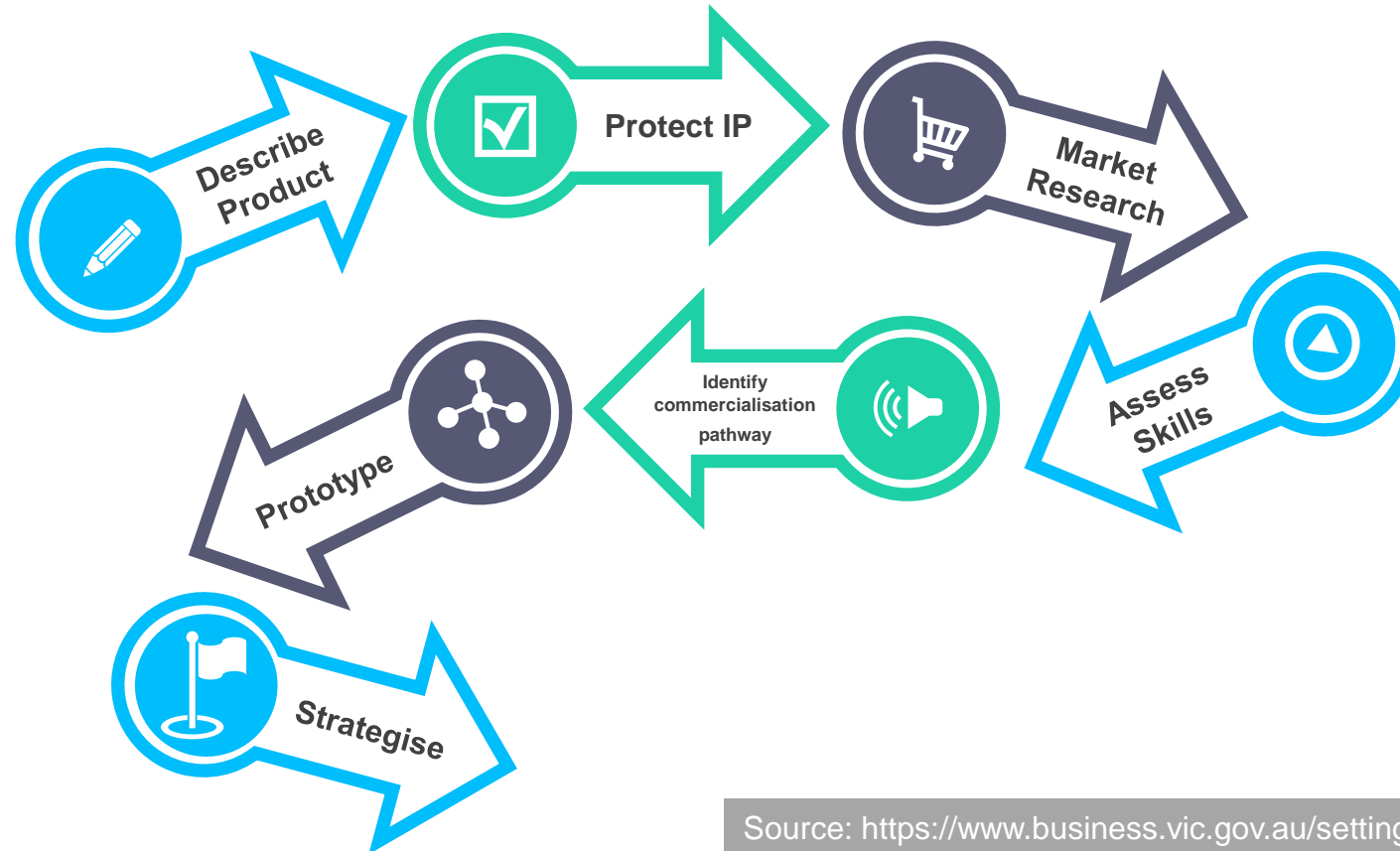
Patents as an enabler to Commercialisation

Profiting off Patents

Patents provide the inventor with the **guarantee of temporary monopoly to fully exploit the IP** and recoup the expenses poured into the R&D of the product.



Steps to Commercialisation

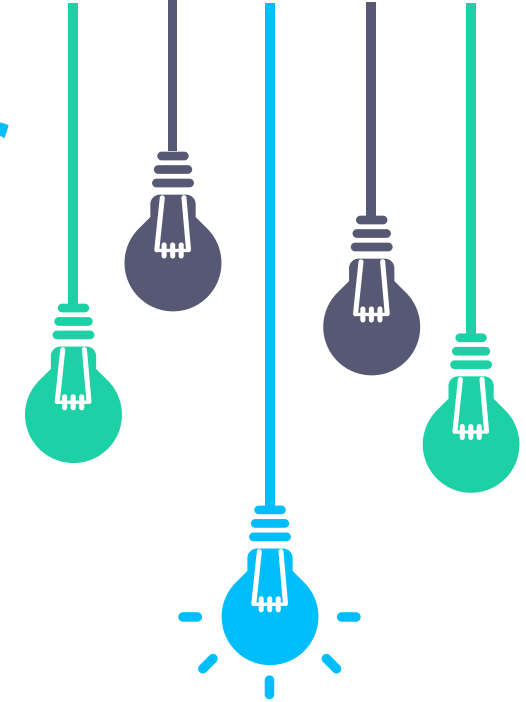
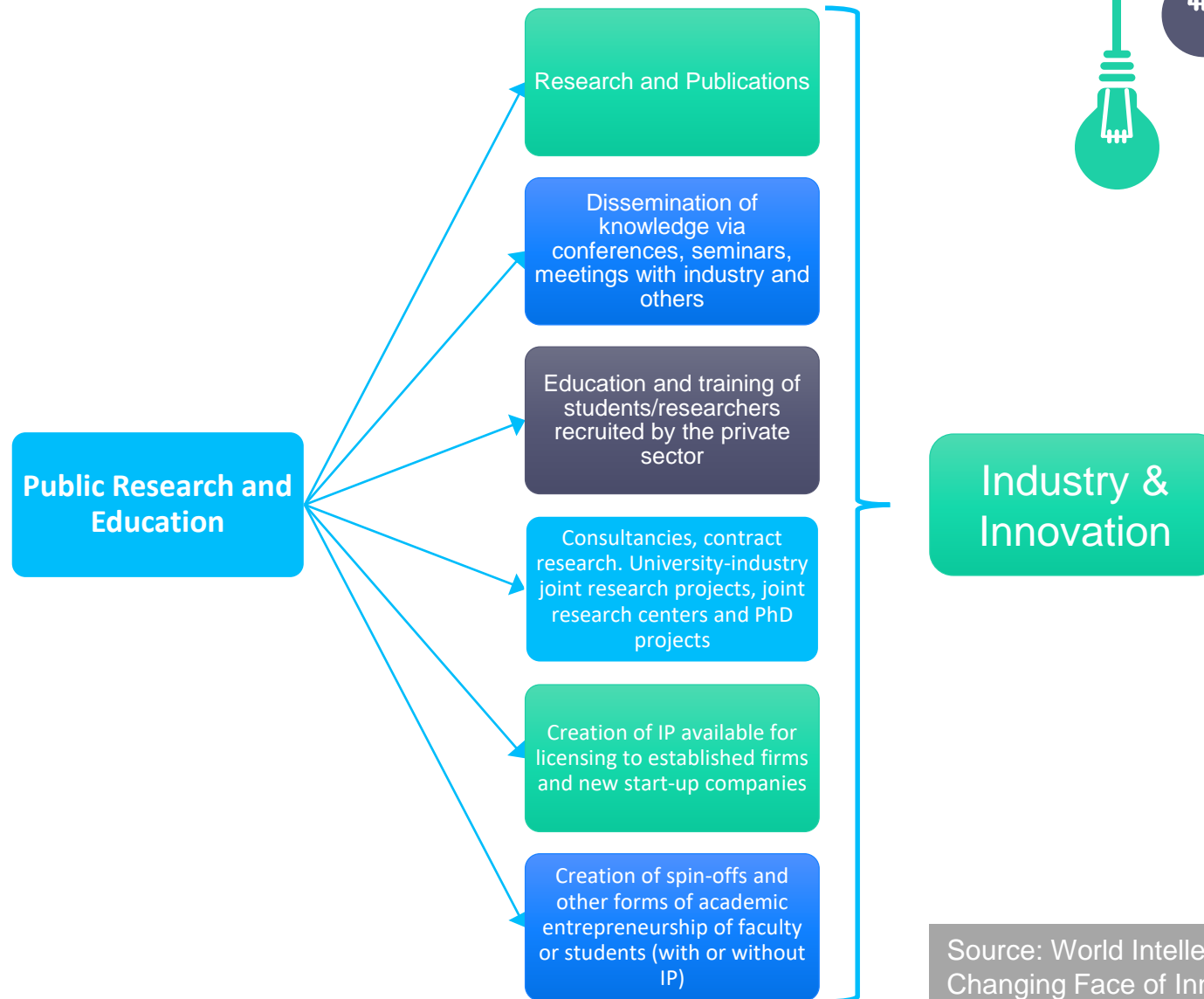


Source: <https://www.business.vic.gov.au/setting-up-a-business/how-to-start-a-business/develop-a-new-product-or-service>

Vectors of Knowledge Transfer

Diffusion of Knowledge

Patents drive further research which then also drives further innovation (and thus produces more patents). **Patents have the cyclically exponential effect of patent research begetting further patent research.**



Patents: legal and individual perspective

Patents provide 20 years of rights to exclusively to profit from and exploit your invention.

How?

Novel, industrially applicable and involving an “inventive step”.

Why?

Allows the inventor to be the only person to be able to sell and license his invention for a term of 20 years.

Patent Infringement

Patent-holders may sue a copying party for infringement. This involves stopping them from profiting the patent or taking the profits of the patent’s sale.

Patents as a Subset of Intellectual Property

Trademark

The “Brand” or “Logo” of the Product, so to speak.

Patent

Protects the function of an invention.
For example, a specific and novel method to capture high resolution pictures on a phone camera.



Copyright

Creative literary and artistic works.
Might include phone wallpapers, the animations, certain texts in the phone software.

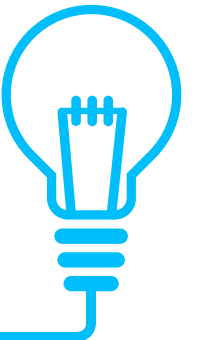
Design Right

The aesthetic features of the product, how it looks, but not how it functions.

Patents vs other Intellectual Property Protections

Intellectual property protections differ between jurisdictions, but there are generally accepted protections known to most. It is vital that the correct protection is recognised and applied for to avoid problems down the line.

Copyright	Patent	Trademark	Design Right
Creative Protection <ul style="list-style-type: none">• Protects creative or intellectual literary works• Applies to the creative expression of the work with no physical utility.• Eg. A research paper but not the ideas inside of it.	Invention Protection <ul style="list-style-type: none">• Protects the novel process or invention• Mainly protects <i>useful</i> ideas compared to copyright which protects creative expression.• Patents protect the novel functions of some invention while copyright does not• Eg. Patents protect the computer program's literal code but not its function.	Brand Protection <ul style="list-style-type: none">• Trademark protects the symbols used to conduct business.• Can be protected indefinitely.• Cannot have utility	Visual Protection <ul style="list-style-type: none">• Protects the aesthetic features of a product.• Designs dictated by function may be rejected.



What do **researchers** need to **understand**?

PROCEDURE of Registration

- Where to apply
- Claims procedure
- Novelty search
- What forms are required?

TIMELINE of Registration

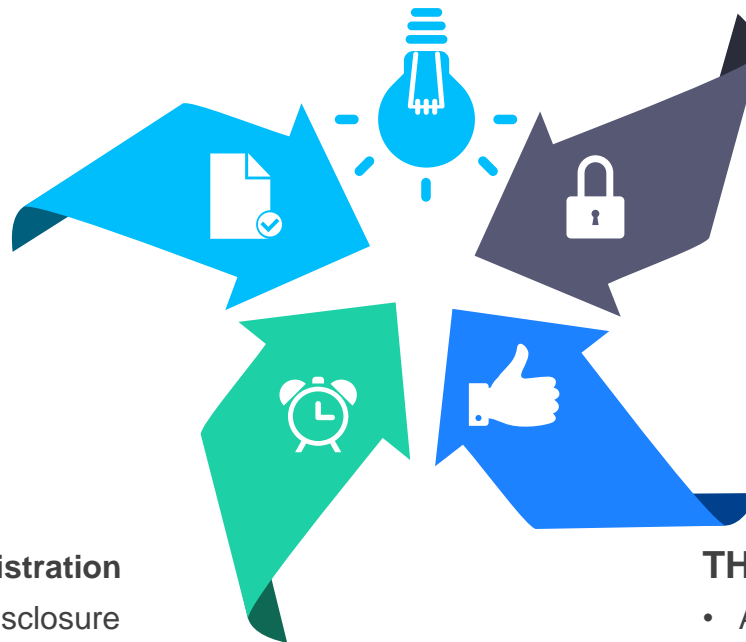
- Grace period of disclosure
- When to file
- How long protections lasts?
(lifetime+50 copyright, 20 patent, indefinite trademark)

Is the idea **PROTECTABLE**?

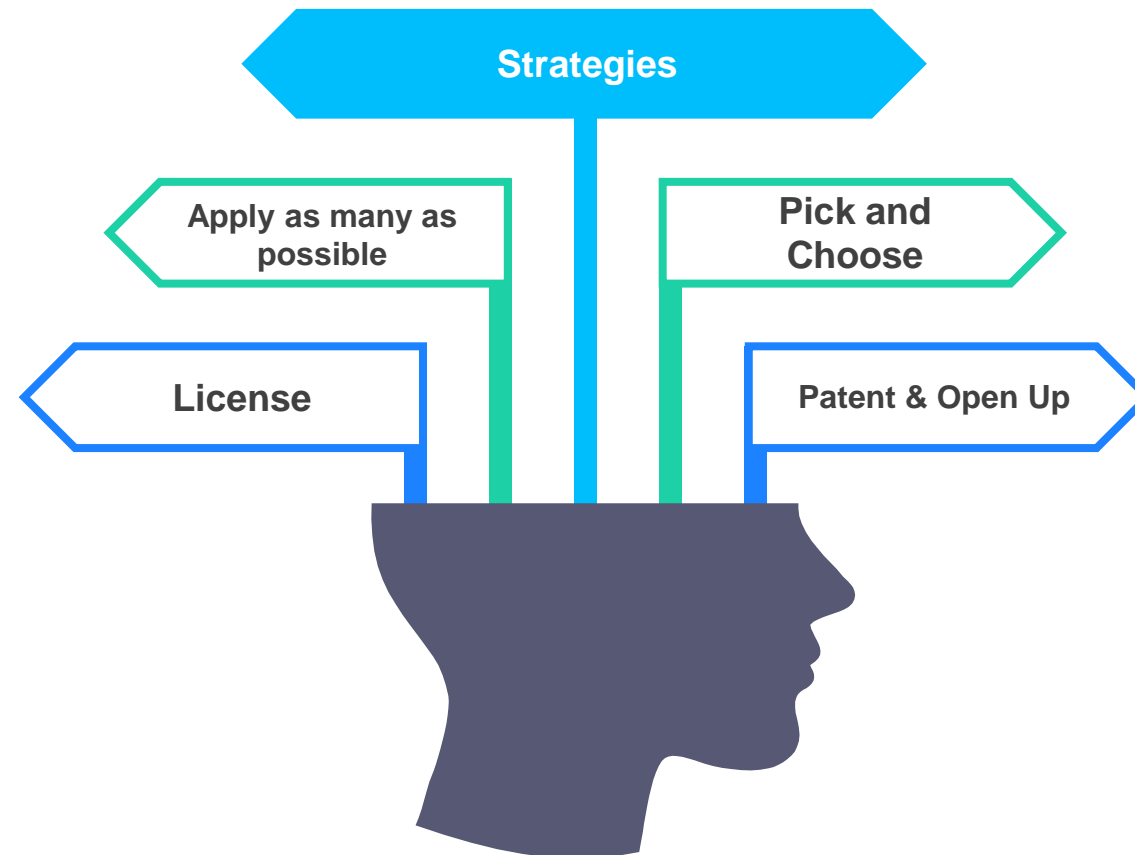
- What category of IP protection?
(Patent, Copyright, etc. ?)
- Registrable vs Non-Registrable?
(eg. Copyright needs no registration)
- Subject Matter

THRESHOLD of Registrability

- At what level of originality can protection be conferred?
- Novelty of patent involving an inventive step, Originality of copyrighted work, distinctiveness of trademark, eye appeal of design right.







IP Strategies



Standard Types of Patent Data

Patent Statistics often come with a number of important statistics which can be used to determine general trends in worldwide patent output. These are some of the most common.

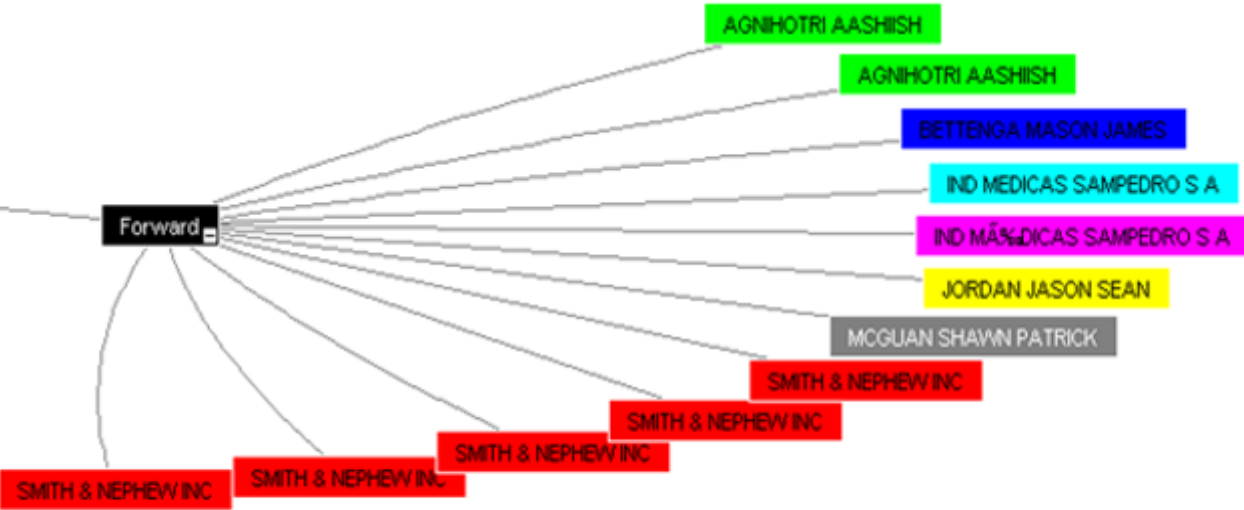
			
Patent Office	Application Process	Inventor Locale	Other Statistics
Where the patent was applied for	Steps in the process	Often, inventors will also file patents in different countries	Other important statistics include:

Domestic Patents			Resident	IPC Classification	Patent category
US Patent & Trademark Office (USPTO)	Patent Application	Not all patents applied for are accepted	Non-Resident	Inventor	Makers who may not necessarily have ownership
Patent Cooperation Treaty	Patent Grant	But when accepted, they are said to be granted		Assignee	Those with a legal interest in the patent
Other National Patents				Cited By	
				Non-Patent Citations	



Prior Art / Backward Citation
Shows how knowledge in past inventions influences or inspires new inventions.

Forward Citation
Or reverse citations. Shows the patents inspired by the parent patent or which have referred to the parent.

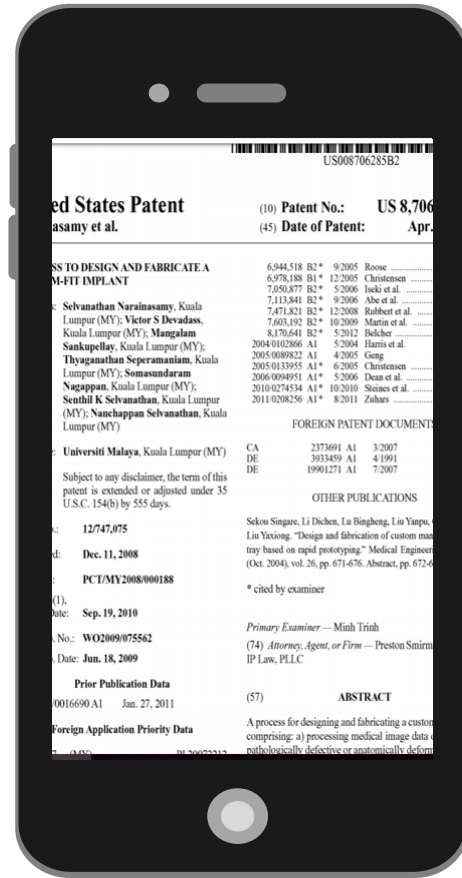


Derwent Innovation™ @International Joint Intellectual Property Laboratory (IJIPL), MJIIT, UTM

Knowledge Diffusion as seen through Patent Citation

Patent citations are often considered as a proxy for the impact of science on technology as they are used as a means of gauging the flow of information on the innovative processes contained in them and their application to various technical fields that would subsequently give rise to new technology

Value of Patents to Scientists



Avoid Redundancy

Patent citation data also allows scientists to discover what their competitors or colleagues in the same field are working on.

Repository of Knowledge

Patent data also acts as a more streamlined repository of knowledge as compared to article citation indices.

Collaboration and Competition

Researchers can also find collaborators to work with in developing inventions. On the other hand, patent data also allows scientists to compare their progress with that of competitors.

Islam and Patents

IP as an extension of Property Rights

IP as “manfa’ah” or usufruct



To Patent or Not to Patent?

Is Patenting Allowed?

Patents are a form of monopoly on “knowledge”. Knowledge in Islam must be shared not conceal, so is patenting allowed?

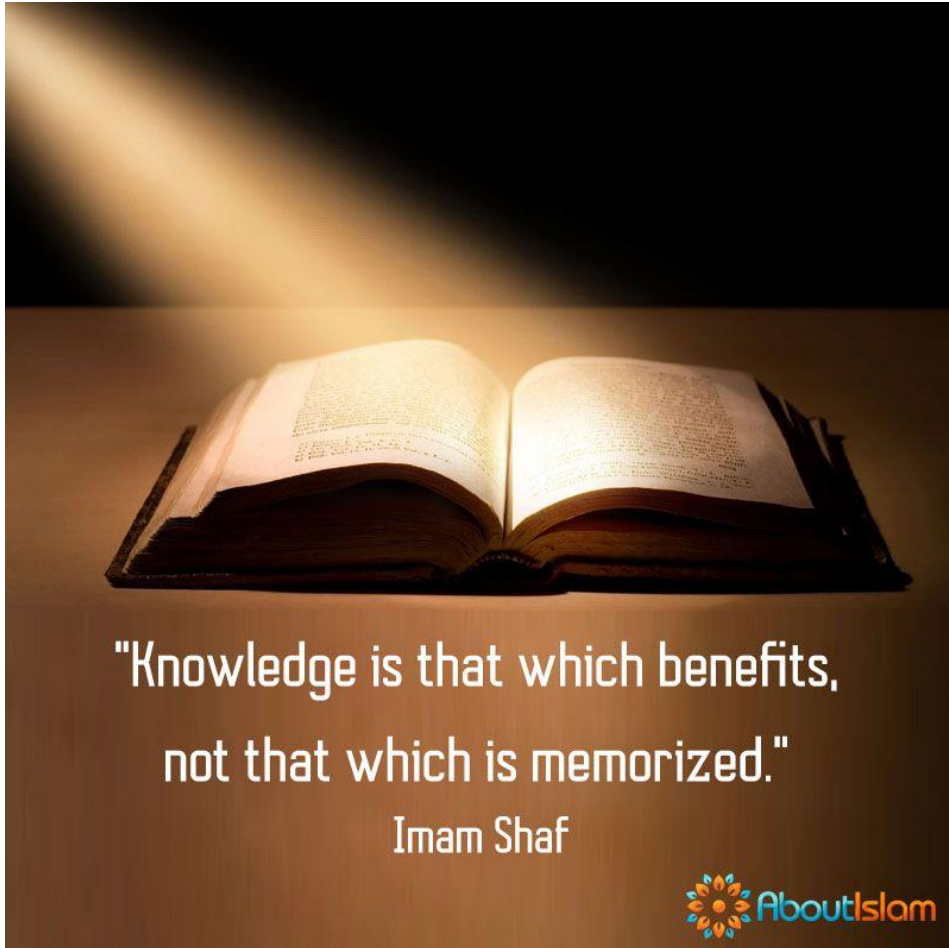
Concealing Knowledge

Patents are actually a monopoly on commercial exploitation.

The knowledge of the patent is free and accessible by anyone, but they cannot profit off it like the inventor can.

Licensing also means the public eventually benefit.

Governments can use **compulsory licensing** to forcefully acquire patent licenses for the public good.



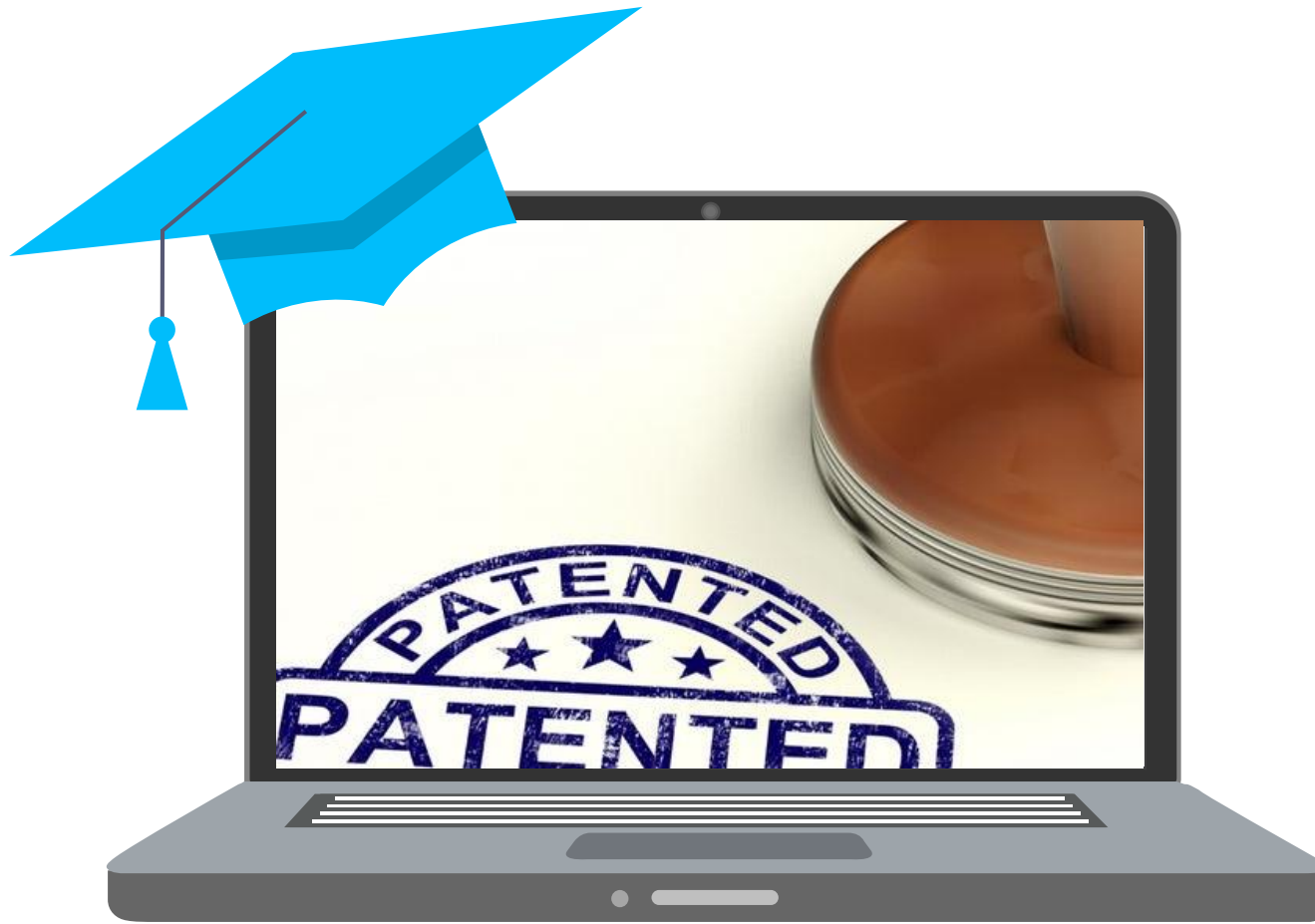
"Knowledge is that which benefits,
not that which is memorized."

Imam Shaf



Is Patenting Encouraged?

To Patent or Not to Patent



Patent	Share
<p>Drives innovation and funds the pursuit of knowledge.</p> <p>Islam values pursuing knowledge.</p> <ul style="list-style-type: none">• "If anyone pursues a path in search of knowledge, Allah will thereby make easy for him a path to paradise; and he who is made slow by his actions will not be speeded by his genealogy."<ul style="list-style-type: none">• Sunan Abi Dawud 3643	<p>Knowledge benefits the public.</p> <p>Sharing knowledge is encouraged.</p> <ul style="list-style-type: none">• "When a person dies, his deeds are cut off except for three: Continuing charity, knowledge that others benefited from, and a righteous son who supplicates for him."<ul style="list-style-type: none">• Jami` at-Tirmidhi 1376

Patent Sharing In History

Dr Jonas Salk, inventor of the Polio Vaccine, on who owned the patent:

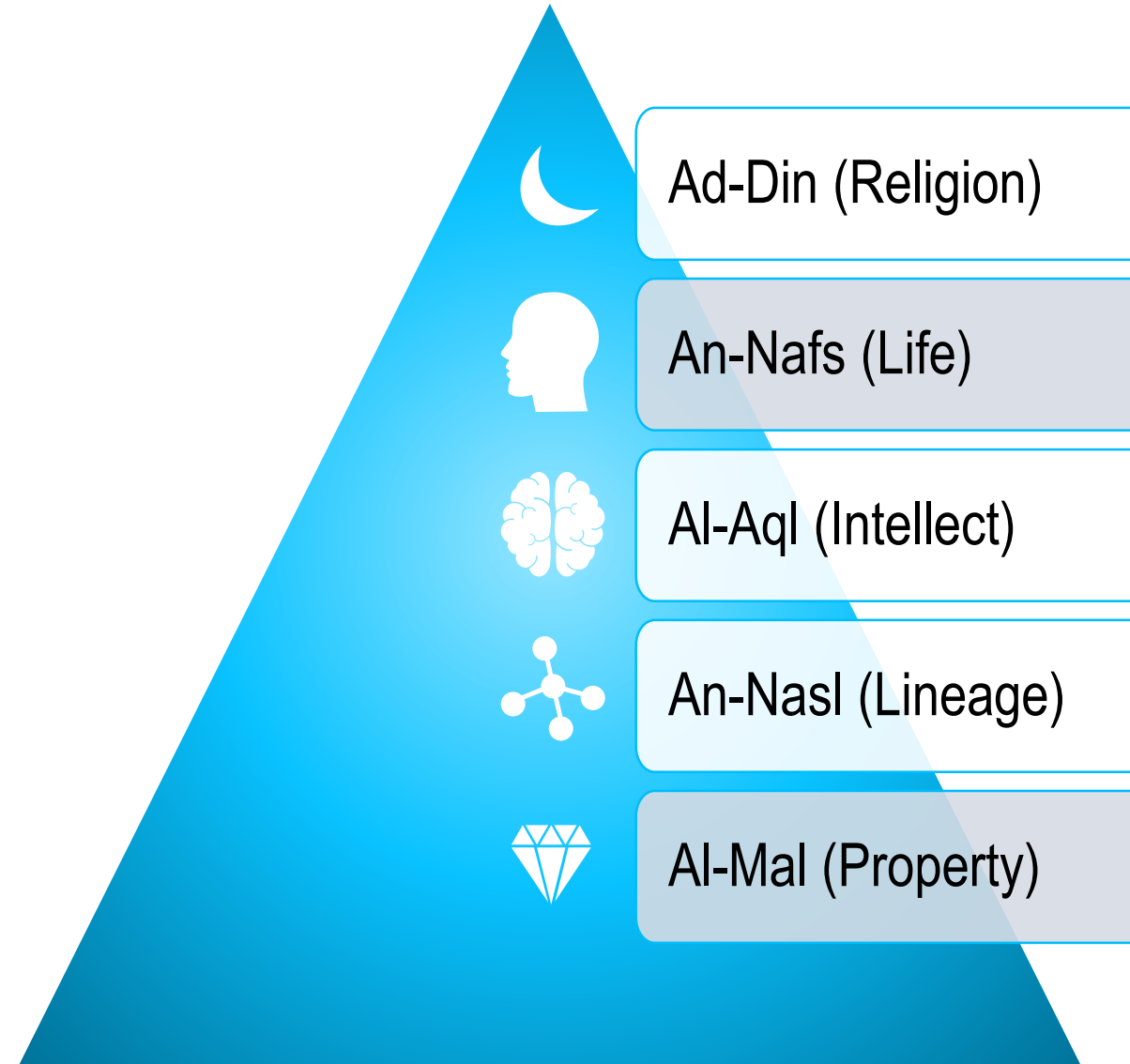
“

"The people, I would say.
There is no patent. *Could you patent the sun?*"

”



Maqasid **al-Shariah**



Patents and UN Sustainable Development Goals



Patents and UN Sustainable Development Goals



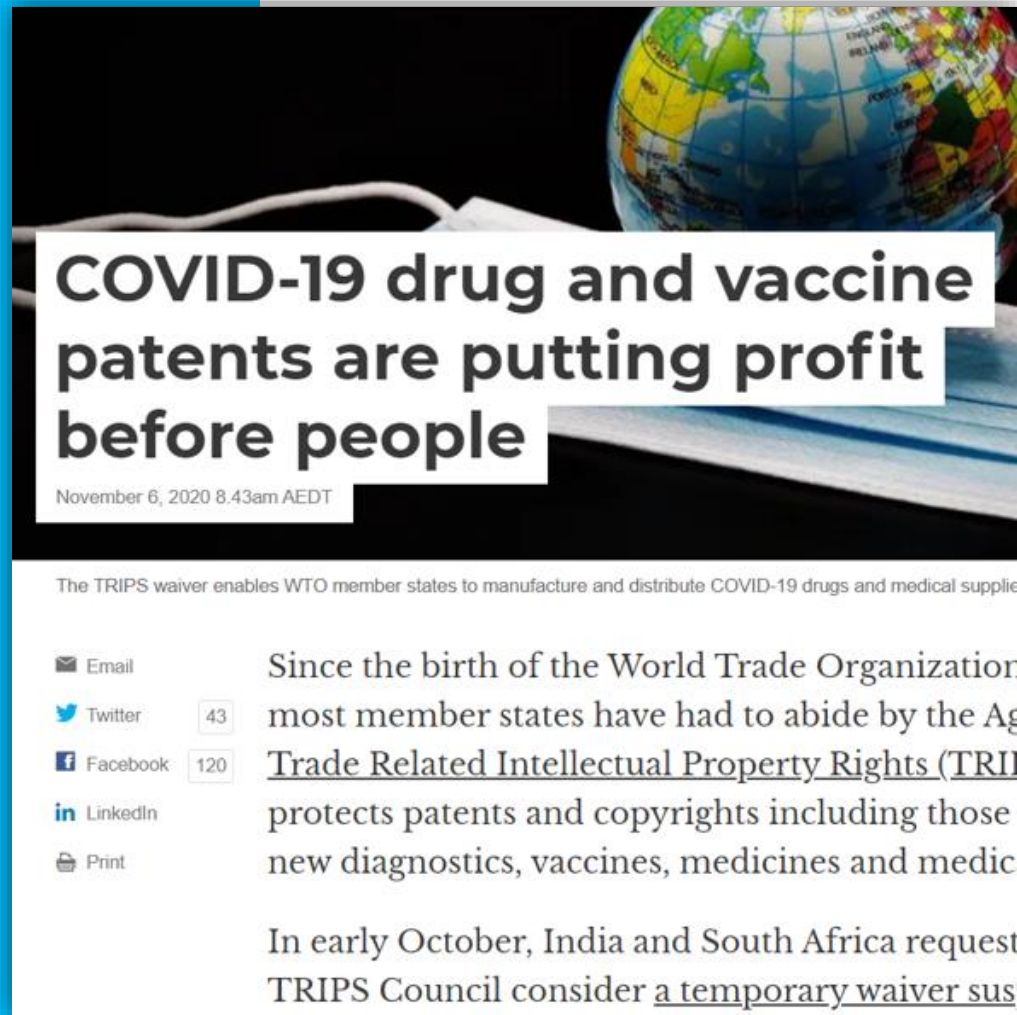
Leverage **Alternative Resources**

Open Source and Copyleft Licenses

Open source and copyleft licenses provide free research resources. Using and contributing to it helps drive development by **breaking down barriers that stymie the diffusion of knowledge**.

“*Productive scientific research requires **free and rapid flow and exchange of information**. The process of securing formal intellectual property rights (IPRs) may restrict this flow, and thus can **impede or conflict with the effective development of science**.*”





COVID-19 and the Weaknesses of Patents



We must consider the ethics of patents on a case-by-case basis



Licensing and patent disputes stifle the innovation and speed of production of much-needed drugs



It is easy to be in a situation where unfavourable licensing means that not enough drugs are supplied.

Patents and our Relationship with Allah S.W.T.



All knowledge is a grant in common by Allah S.W.T held in trust by all mankind.



Seeking knowledge is a form of ibadah.



We can use that knowledge for the benefit of humanity. Indeed, the knowledge seekers are praised in Islam.



The Messenger of Allah said, "He who follows a path in quest of knowledge, Allah will make the path of Jannah easy to him. The angels lower their wings over the seeker of knowledge, being pleased with what he does. The inhabitants of the heavens and the earth and even the fish in the depth of the oceans seek forgiveness for him. The superiority of the learned man over the devout worshipper is like that of the full moon to the rest of the stars (i.e., in brightness). The learned are the heirs of the Prophets who bequeath neither dinar nor dirham but only that of knowledge; and he who acquires it, has in fact acquired an abundant portion."



[Abu Dawud and At- Tirmidhi]
Riyad as-Salihin 1387

وَقُلْ نَزَّلْنَاهُ فِي عِلْمٍ

سُبْحَانَكَ لَا عِلْمَ لَنَا إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ الْعَلِيمُ الْحَكِيمُ

Designed By
Muhammad Shafiq

Holy Qur'an
Surah Tā Hā: 114



مَرْكَزُ الْعَالَمِ الْإِسْلَامِيِّ لِلْعِلْمِ وَالْعِلْمِ وَالْثَقَافَةِ
ISLAMIC WORLD EDUCATIONAL, SCIENTIFIC AND CULTURAL ORGANIZATION
ORGANISATION DU MONDE ISLAMIQUE POUR L'ÉDUCATION, LES SCIENCES ET LA CULTURE



ISESCO Centre for Promotion of Scientific Research



الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُونَيْتِي السَّلَامُ أَتِيَا يَحْيَا مِلَّةِ سَيِّدِنَا
Garden of Knowledge and Virtue

Thank You