



# Intellectual Property - Catalyst or Contaminant - and China?

Ian Harvey

April 20<sup>th</sup>, 2026



**Actress – “Ekstase” - 1933**

***What did she do  
that affects all  
our daily lives?***

**A patent gives you the  
right to use your  
invention**

***True or False?***

***Who said:***

**“Future competition in the  
world is competition in IP ....”**

# Ian Harvey – Background

- **1960s: Engineer by education, training and experience**
- **1970s: World Bank – Asia and Africa**
- **1985-2004: BTG CEO**
  - **patenting and licensing publicly-funded research from universities and government-funded research**
  - **understanding role of seminal research in creating truly innovative products**
- **2004-2021: consulting, teaching (including Tsinghua, China)**

# Three main types of IP

- **Copyright**
- **Trademarks**
- **Patents**

# Copyright

- **70/95 years – simple & free – nothing to register**
- **international right, simple, zero cost, certain, use is simple**
- **Make sure you can prove what you wrote and when you wrote it!**
- ***managing ‘creative work’, databases, software .....***

# Trademarks (Brands) & Origin

- Last for ever – quite simple and cheap
- Need to register in each country for protection
- Country specific, relatively simple and certain, cheap
- *promise of quality: creating and managing consumer loyalty*



# Patents are different .....

- **Patents:**
  - Inventions – must be *inventive* and *novel*
  - Lasts for 20 years
  - They are a *country-specific* right
  - Cost can be substantial – renewal fees in some countries
  - They can be exceptionally important (and valuable), but they can be uncertain, complex and expensive to acquire and defend
  - *Purpose: encourage investment in innovative but risky ideas, inventions and technology*

# A patent is potentially valuable but an uncertain and expensive right

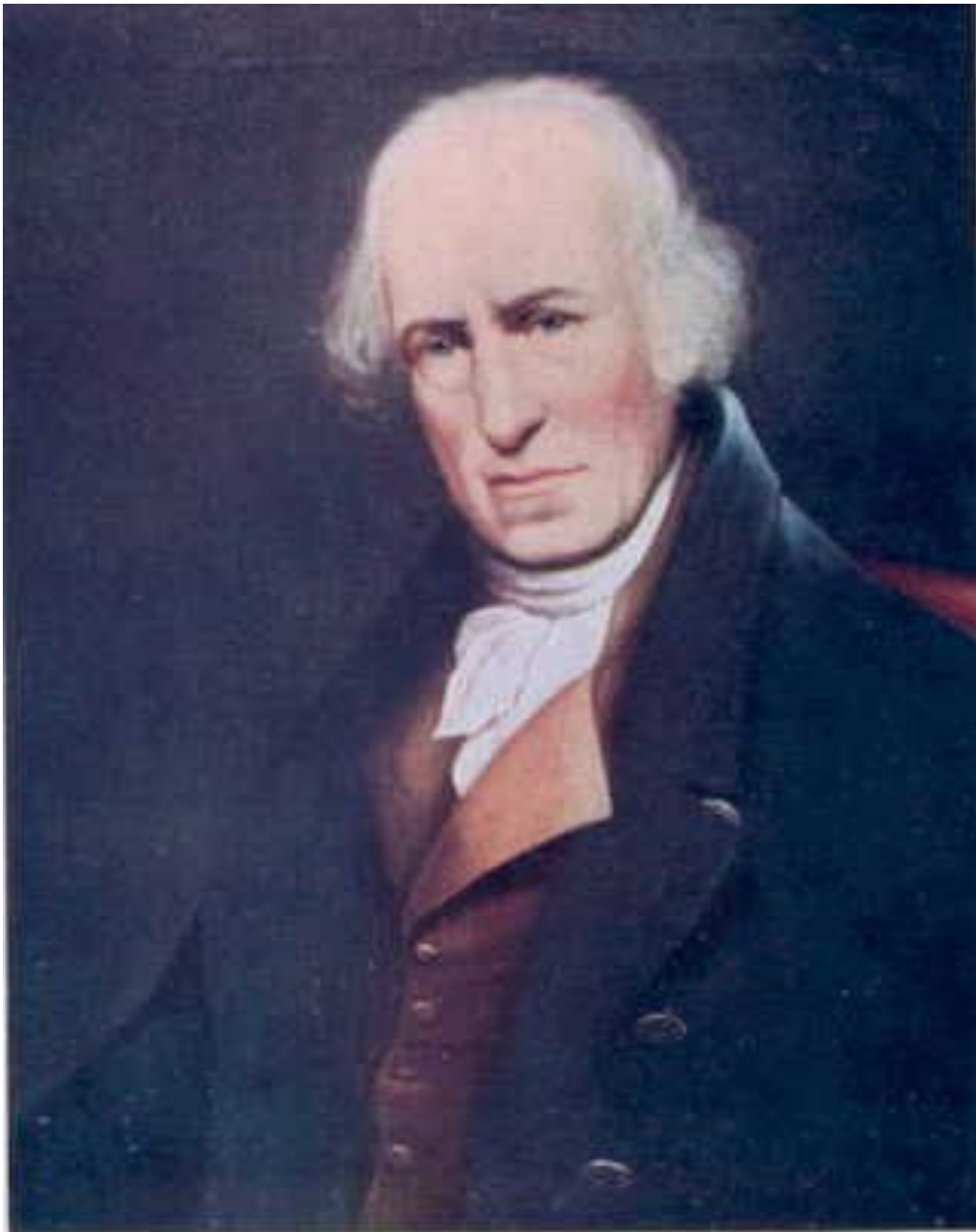
- **Conditionality: a patent is not an absolute right:**
  - ***Novelty***: at any time new “prior art” from anywhere may invalidate patents everywhere
  - ***Obviousness***: courts may decide it was “obvious”
- **Expensive if international:**
  - \$250k lifetime for international patents
  - Enforcement: Germany \$100k; UK \$500k; US \$5m & 2 – 7 years; China \$20-120K & 2-14 months
- You need people with the right skills and resources

# What does a patent do for you?

- It gives you the right to **stop other people** from making, selling or using your invention commercially
- A patent does **not** give you the right to use your own invention!

# Two revolutions:

- **Steam**
- **Software**



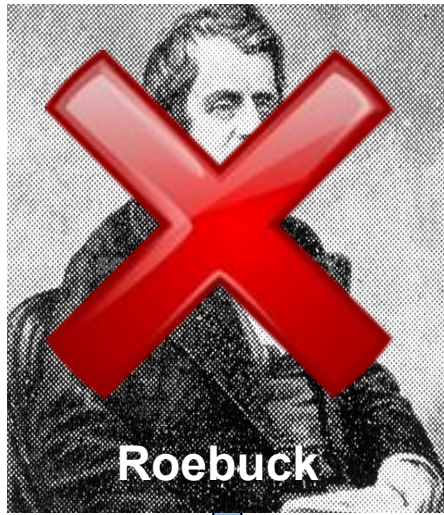
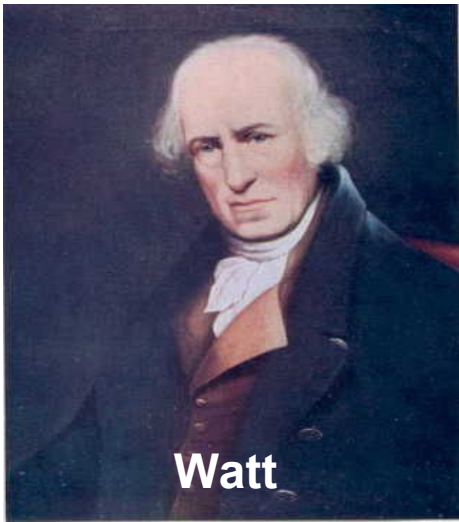
**James Watt**  
**FRS**



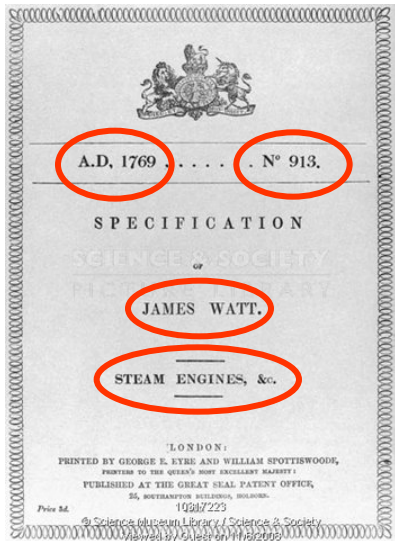
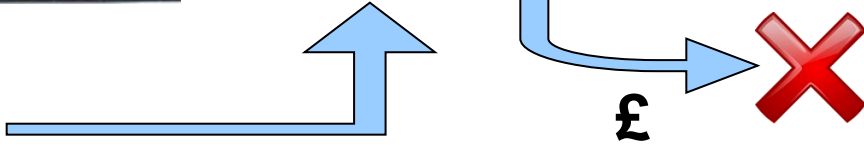
**Matthew  
Boulton  
FRS**

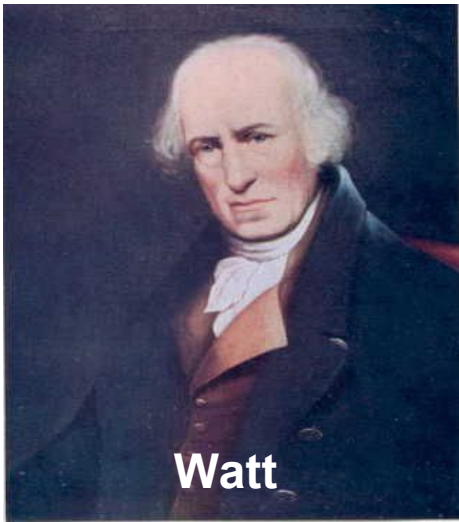


**John  
Roebuck  
FRS**

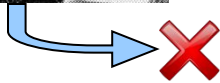


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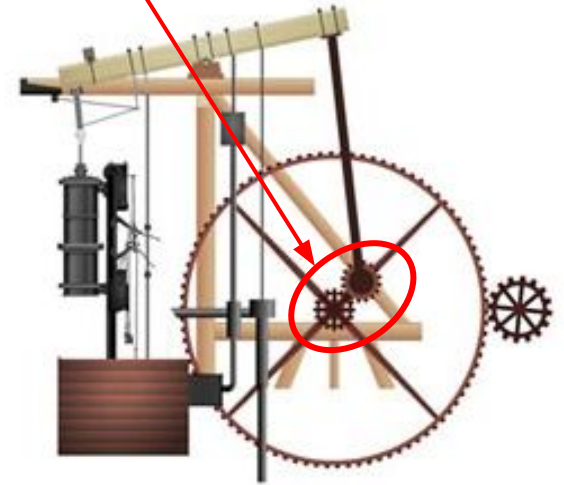




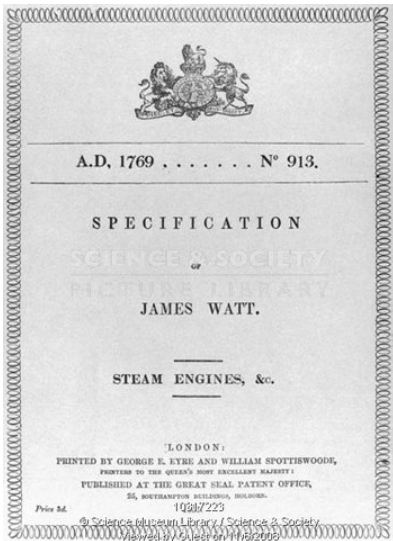
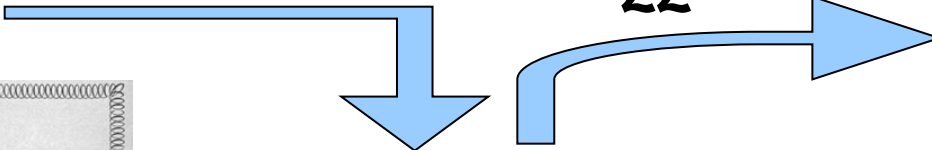
Watt



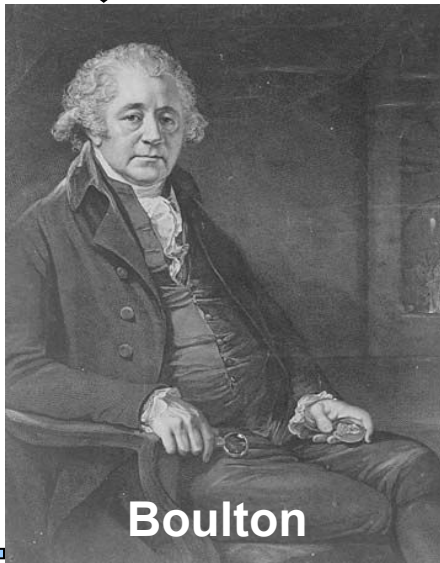
Sun and Planet (epicyclic) drive avoids Pickard's crank patent



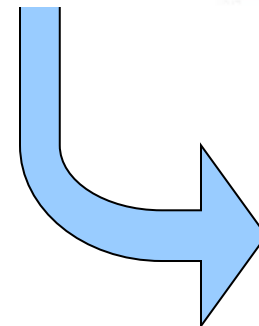
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Extended from 14 to 30 Years

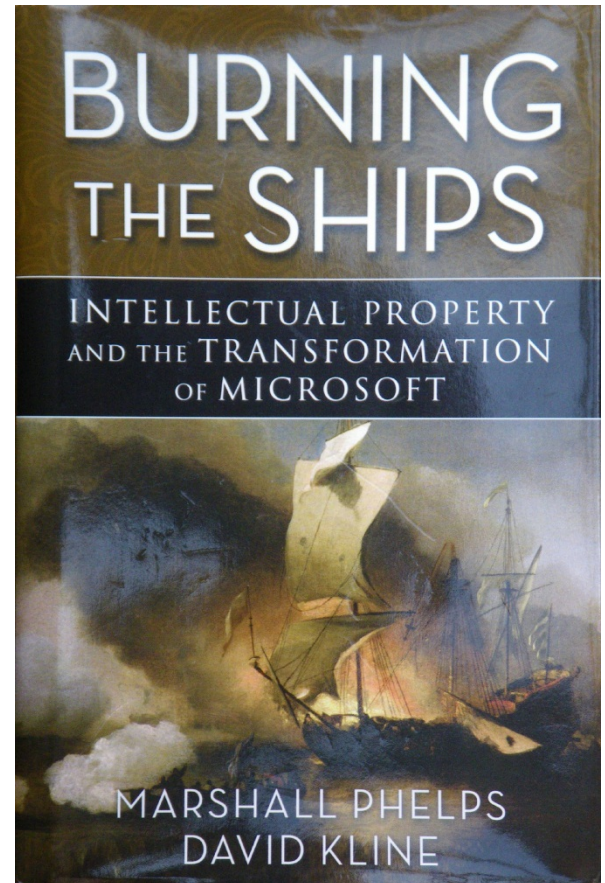


Boulton



# The Software Revolution - Microsoft

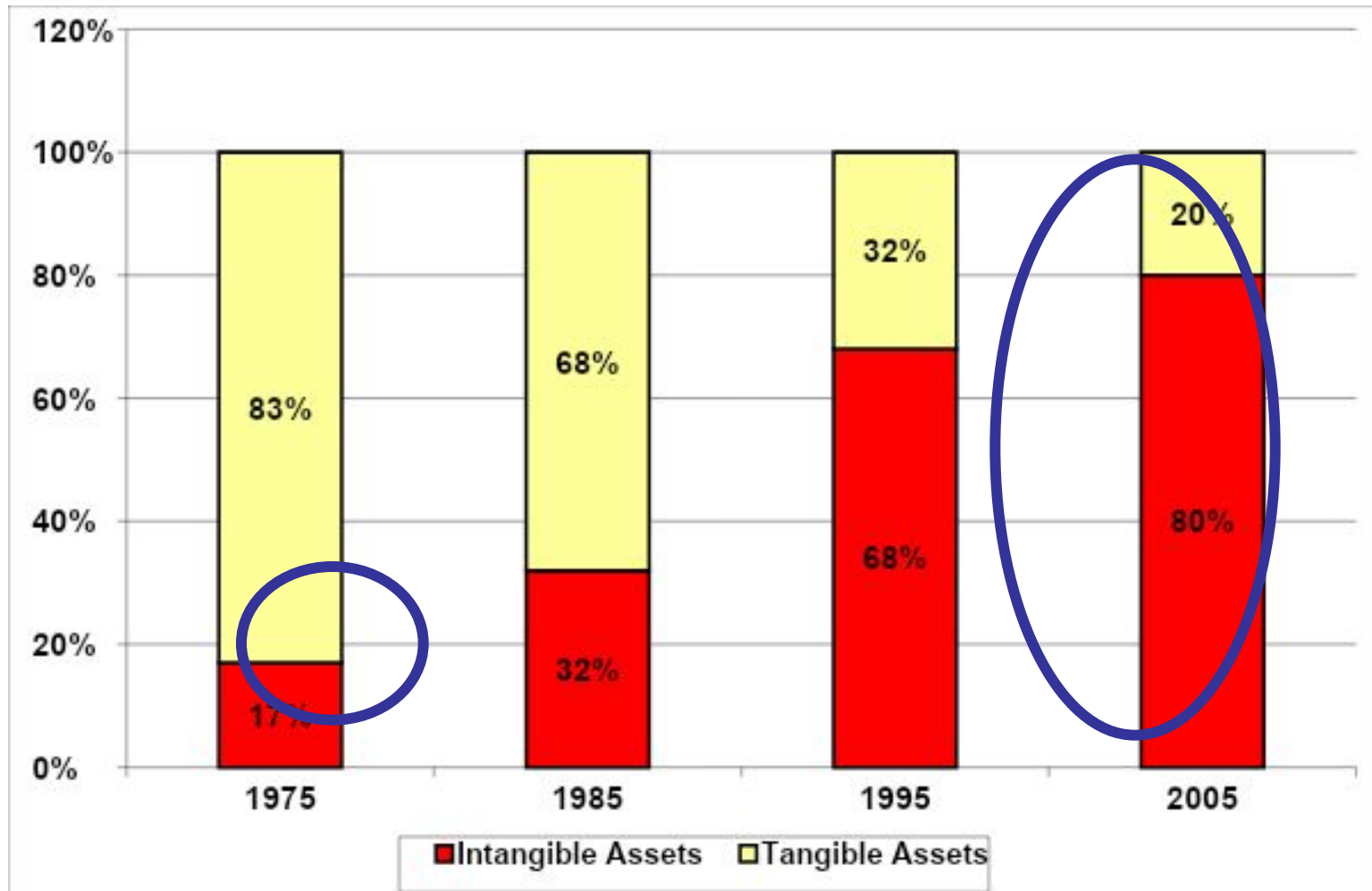
- **Bill Gates understood IP**
- **Microsoft built on copyright**
- **Then software patents**
- **IP is the “Bridge to collaboration”:**
  - **Collaborations:**
    - **2003 = 0 (<100 patents)**
    - **2009 = 500 (>20k patents)**
  - **Partnering with Open Source**



# Lessons from 250 years

- The inventors and heads of these successful companies (Watt, Boulton, Gates) understood IP very well
- IP was essential to raising finance for developing their ideas
- Many researchers and heads of companies today do not understand IP well – they leave it to their (often non-commercial) IP specialists
- *Your invention is more likely to succeed if you are IP-literate*

# US Corporate Valuations: S&P500<sup>®</sup>



## **IPRs provide:**

- **The incentive to innovate and invest in risky new ideas**
- **The legal clarity and certainty for technology transfer transactions – including creation of IP pools – they are enforceable in court**
- **The choice to IPR owners how their IPRs will be used**

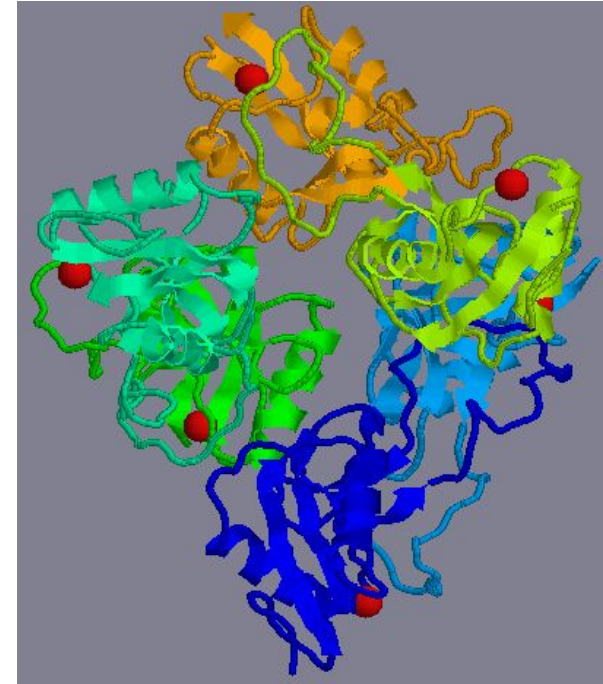
# Common misunderstandings – does IP.....

- *confer ownership of the technology - the “ownership of life” issue?*
  - No - patenting is a passive right - - a patent allows you to stop someone else using your invention, it does not confer ownership of the technology or the right to use it
- *keep things secret?*
  - No - a patent puts the invention into the public domain
- *last for ever?*
  - No - a patent ends 20 years after filing the application
- *constrain research into the patented area?*
  - No - patenting does not prevent research except, possibly, in the US

# Factor IX *George Brownlee, Oxford*

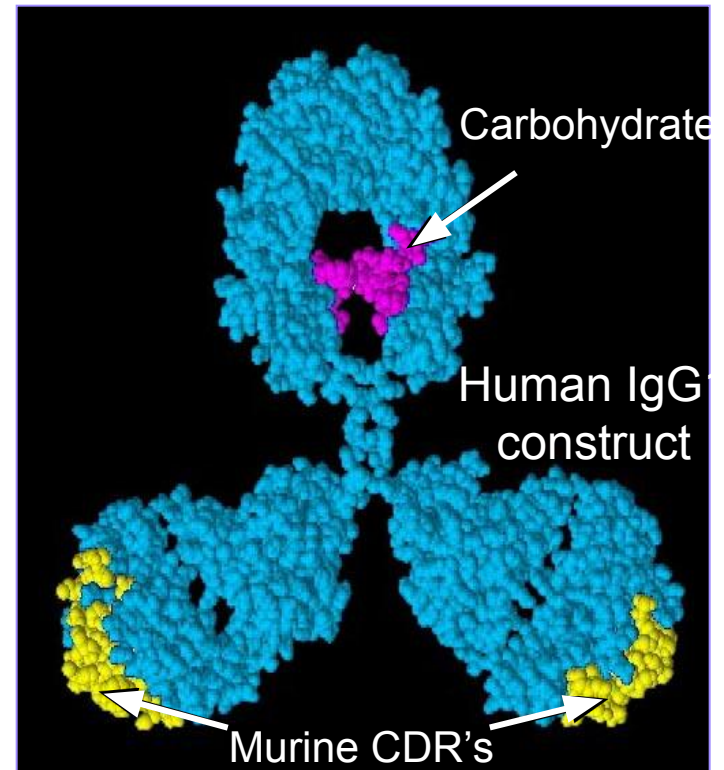
## *Treatment for haemophilia B*

- Sequenced the F IX gene
- Two independent IP sources - *IP uncertainty – no one developing*
- Strategy: *Brought together IP from Universities of Washington State and Oxford*
- Result:
  - Licensed Genetics Institute (AHP) and five others
  - Licencees developed gene therapy applications via different vectors  
~\$500m invested – *only one succeeded*
  - Treatment for 13,000 haemophiliacs worldwide
  - BTG BeneFIX revenues ~\$15 million pa



# Campath<sup>®</sup> *Herman Waldman, Cambridge*

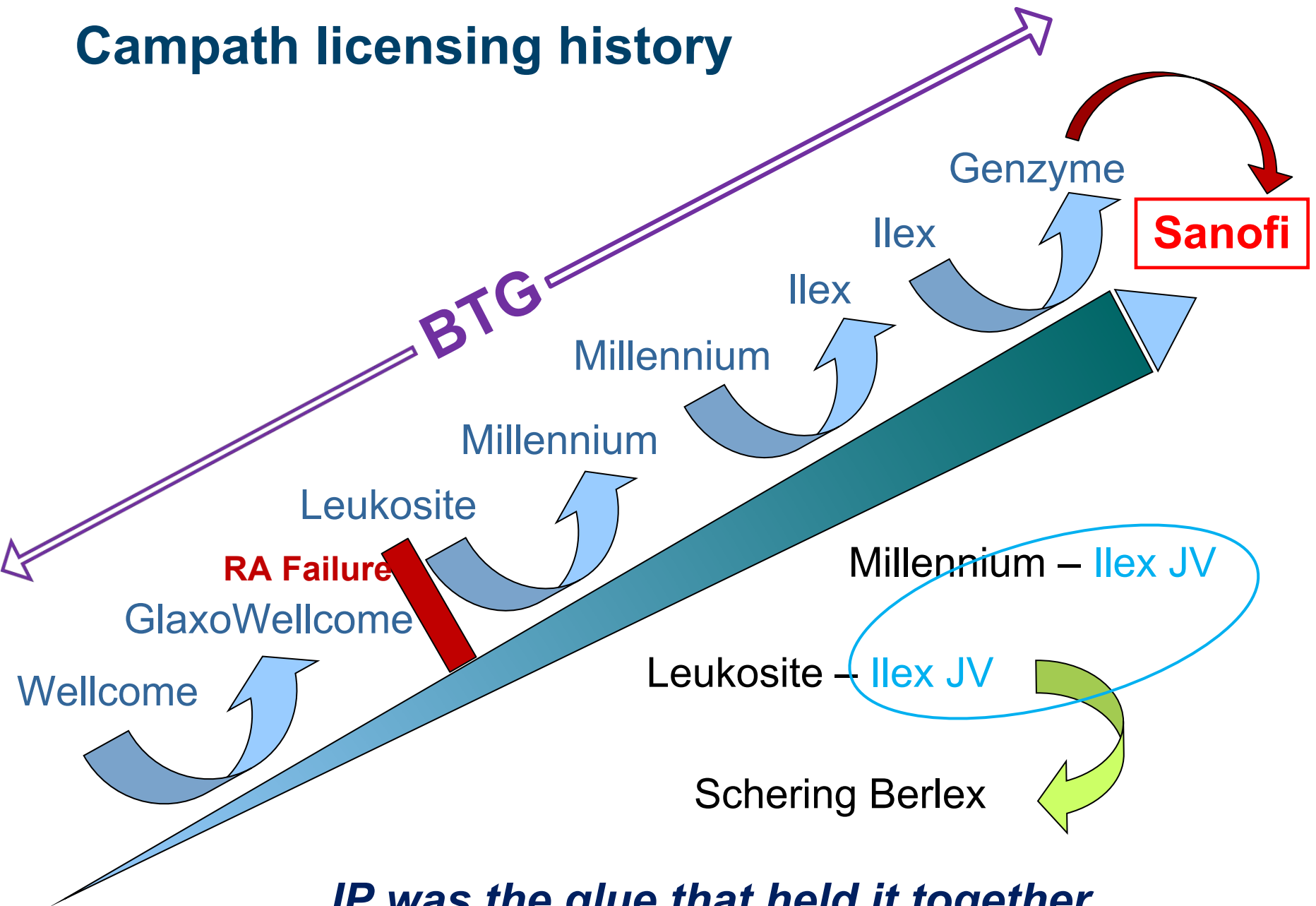
- First monoclonal antibody approved for human therapeutic use
- humanised monoclonal antibody directed against the CD52 antigen – 1983
- BTG Licensed Wellcome Foundation (now GSK) for rheumatoid arthritis
- Failed clinical trials
- Development abandoned
- *So what happened?*



Depletes immune cells implicated in variety of auto-immune related disorders

Reverses or halts progression of CLL by depleting the malignant B cells associated with the disease

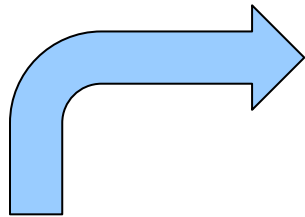
# Campath licensing history



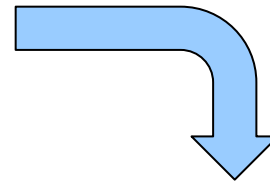
*IP was the glue that held it together*

# Development times

*Campath 1H* → *Alemtuzumab* → *Lemtrada*



**Chronic  
Lymphocytic  
Leukemia  
(2001)**



**Rheumatoid  
Arthritis  
(early 1990s)**

**Multiple Sclerosis  
(remitting-relapsing)  
(2014)**

# Magnetic Resonance Imaging (MRI)

*Peter Mansfield, Nottingham*

- **BTG & MRC funded development of technology from 1974-1980 in Nottingham and Aberdeen Universities**
- **BTG created IP portfolio from Nottingham, Aberdeen & Oxford universities**
- ***Existing CAT scanner companies (eg EMI, GE) were not interested***
- **BTG initially licensed 4 new entrants.**
  - clinical equipment available by 1983
  - clinical use by 1985
- **1986 to 1989: all the world's MRI manufacturers then took licenses: GE, Marconi, Siemens, Toshiba, Hitachi and Shimadzu, Bruker, Fonar, Esaote.**



*2003 Nobel Prize for Medicine: Sir Peter Mansfield, Paul Lauterbur*

# The variety of IP embedded in technical products

## Smart Phone



### Patents and utility models

- *Data-processing methods*
- *Operating system*
- *Operation of user interface*

### Designs

- *Form of overall phone*
- *Arrangement and shape of buttons*
- *Position and shape of screen*

### Copyright

- *Software*
- *User manuals*
- *Ringtones*
- *Start-up tone*
- *Images*

### Trade marks

- *Brand name*
- *Product type*
- *Start-up tone*

### Trade secrets

*Technical know-how kept "in-house" and not published, e.g. assembly processes, certain materials*

**Smart phone** ~250,000 patents

**Bluetooth 3.0**  ~ 30,000 patents, 200 universities



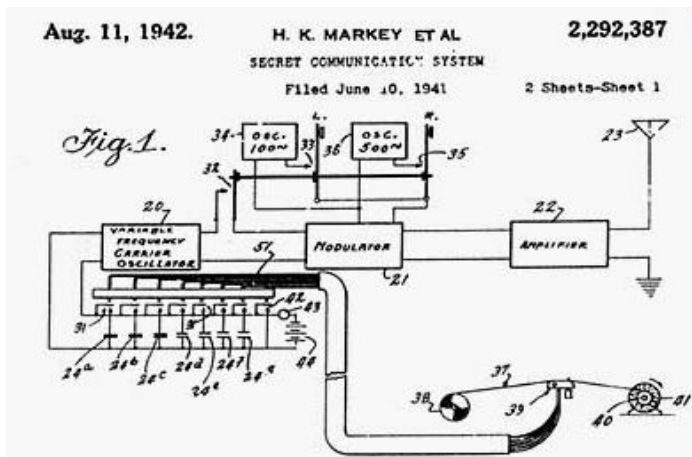
**Actress – “Ekstase” - 1933**

***What did she do  
that affects all  
our daily lives?***

# Hedy Lamarr: Inventor Spread Spectrum Radio Technology



- Actress – “Ekstase” – 1933
- Co-inventor (with Antheil) of Spread Spectrum radio technology
- US Patent No: 2,292,387 1942 (Lamarr-Antheil)
- Cited by over 1000 subsequent patents including CDMA, TDMA, GPS and 802.11 wireless internet (WiFi)



**A patent gives you the  
right to use your  
invention**

***Wrong***

**“future competition in the world  
is competition in IP ....”**

***Wen Jiabao - Chinese Prime Minister  
June 2004 et seq***

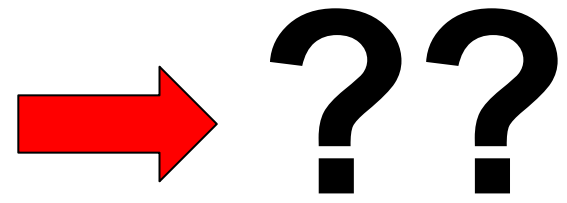
# Takeaways

- **IP is of fundamental importance to our economy and well-being**
- **Although the details of IP are complex, the fundamentals are simple**
- **It is poorly understood – by companies and individuals**
- **We need to do better!**

**“future competition in the world  
is competition in IP ....”**

***Wen Jiabao - Chinese Prime Minister  
June 2004 et seq***

# CHINA IP



# IP in China

- **History**
- **Components:**
  - **Legal structure**
  - **Acquisition of rights**
  - **Enforcement of rights**
- **Problems**
  - **Myths**
  - **Reality**

# China's history in IP



- For 3000 years – copying paid homage to a master
- Between 1945 and 1979, no interest in developing a legal system as we know it
- 1979 - administrative and criminal law reform started
- 1980 - World Bank technical assistance programme
- IP law - early beneficiary + owning (intellectual) property
- Today - “*stealing IP is like stealing your mind*”

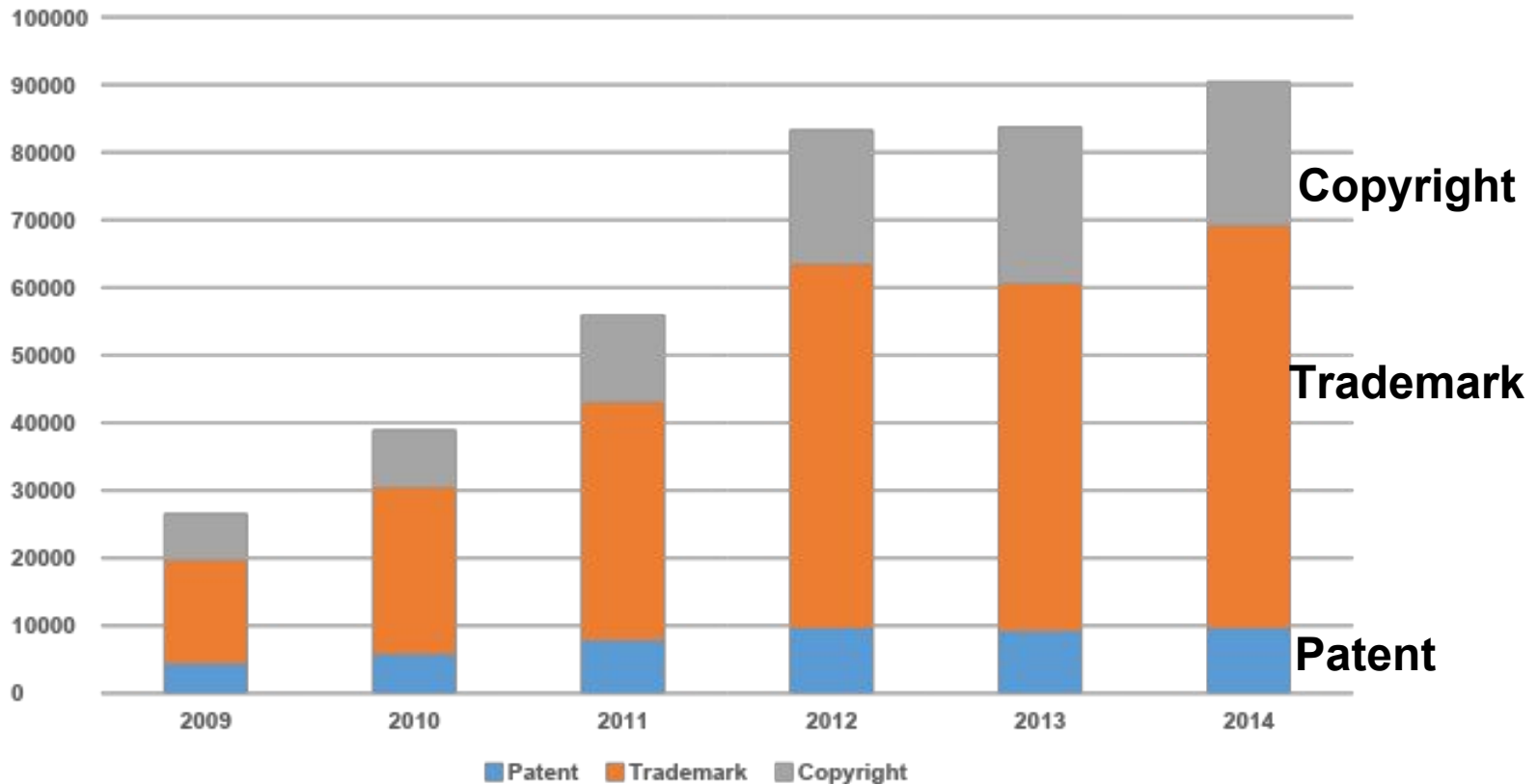
# IP in China

- **1984/92 laws modern IP legal structure – civil law**
- **Excellent patent quality, relatively quick to grant**
- **Enforcement of rights**
  - **All judges have IP training and experience (*cf US*)**
  - **4 IP courts (Beijing, Shanghai, Guangzhou, Hainan) + 30 IP tribunals. (*cf UK 1, US 0*)**
  - **Sophisticated judgements – excellent Appellate Supreme Court**



# IP Litigation\* cases in China 2009-2014

2017 - Patent litigation cases filed: China 16,000, US 4,000



***“Most IP-litigious country”***

# China IP Litigation: dominated by Chinese companies

- More patent litigation in China than any other country including the USA
- **98%\*** of cases are Chinese vs Chinese company
- **Win rate 76%: invention 68%, utility 65%, design 86%**
- **Of the 2% foreign companies, 90% win their cases\*\***

***In the USA only ~35% of foreign companies win their court of first instance cases vs ~65% of US companies***

***Foreign companies are 2 – 3 times more likely to win their patent case in China than in the USA***

***\*Excluding cases related to Hong Kong & Macau (111) and Taiwan (58)***

***\*\* Courts of First Instance. After appeal to courts of 2<sup>nd</sup> Instance China 84%, US ~50%***

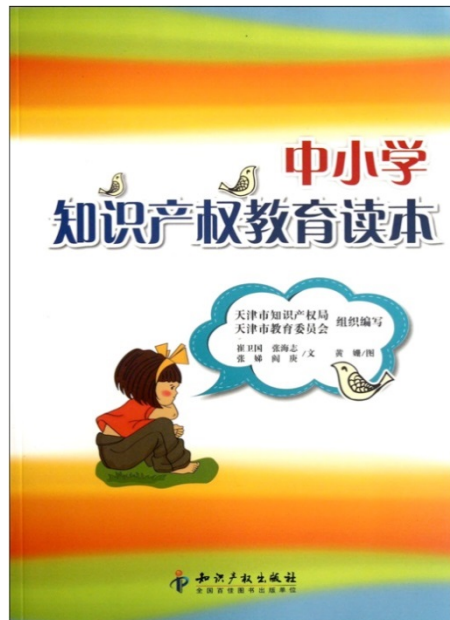
# China's *National IP Strategy*

- “future competition in the world is competition in IP....”  
(*Wen Jiabao - Chinese Prime Minister June 2004 et seq*)
- Best of common/statute law systems - “*unofficial precedent*”
- 15<sup>th</sup> 5yr National Plan - IP Strategy ~ 20 components
  - Current focus: Quantity > quality
- Education: *one* component of National IP Strategy
  - IP education starts in school
    - Tianjin (population 15m) .....

# Tianjin IP Education

- Every primary and secondary school has an IP teacher
- Every child is taught about IP
- Why?
  - *“Because stealing IP is like stealing your intellect”*
  - *“Because a modern economy depends on IP”*
- Tools.....

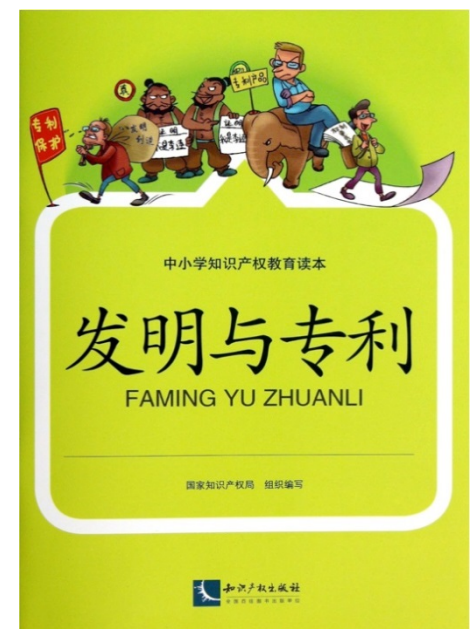
# China School IP Textbooks



Invention and patent textbook for primary and secondary schools

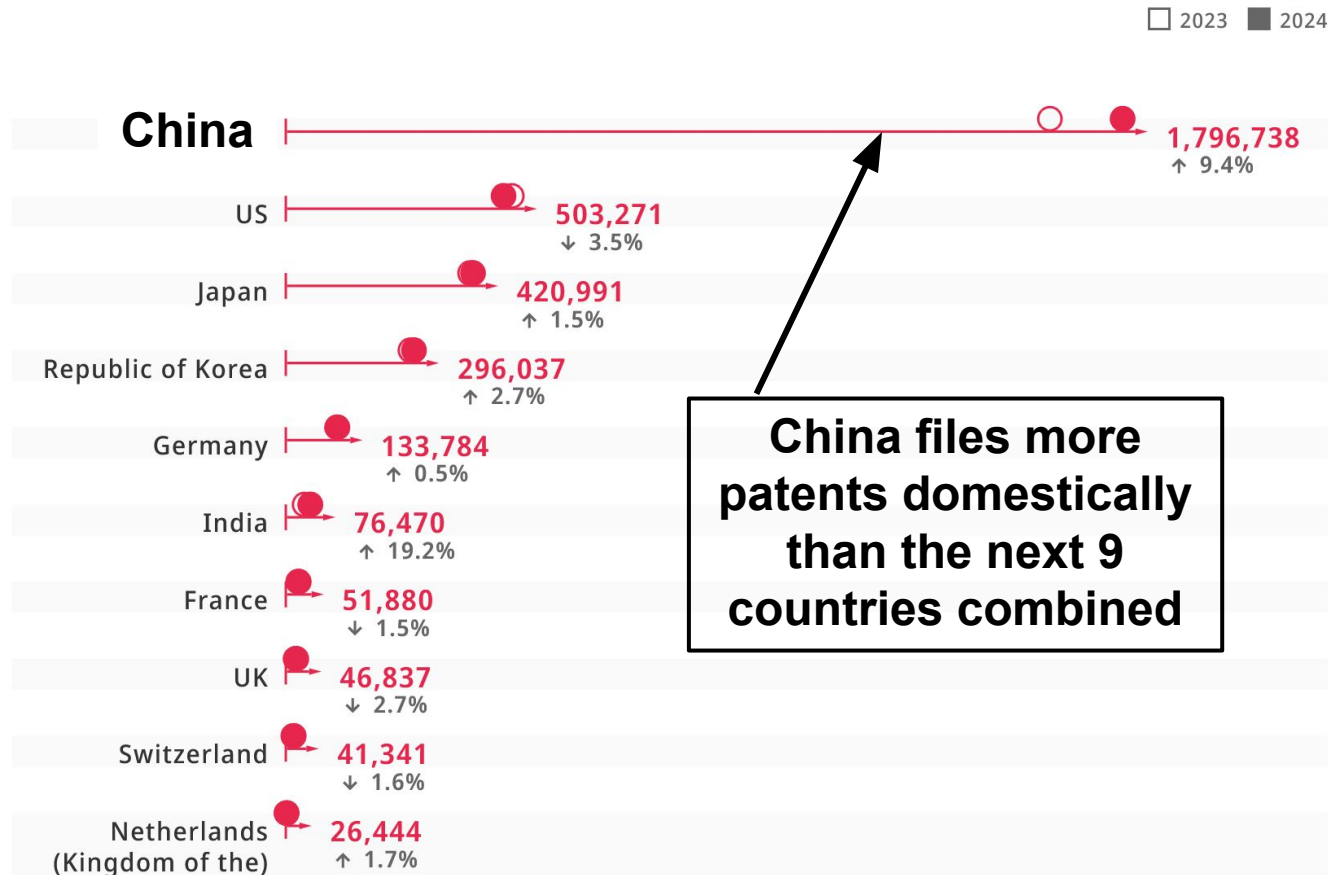
IP textbook for primary and secondary schools

*“It was through the IP system that the British achieved the British Dream”*



# Patent applications - top 10 countries - 2023/24

Applicants from which countries filed the most patent applications?

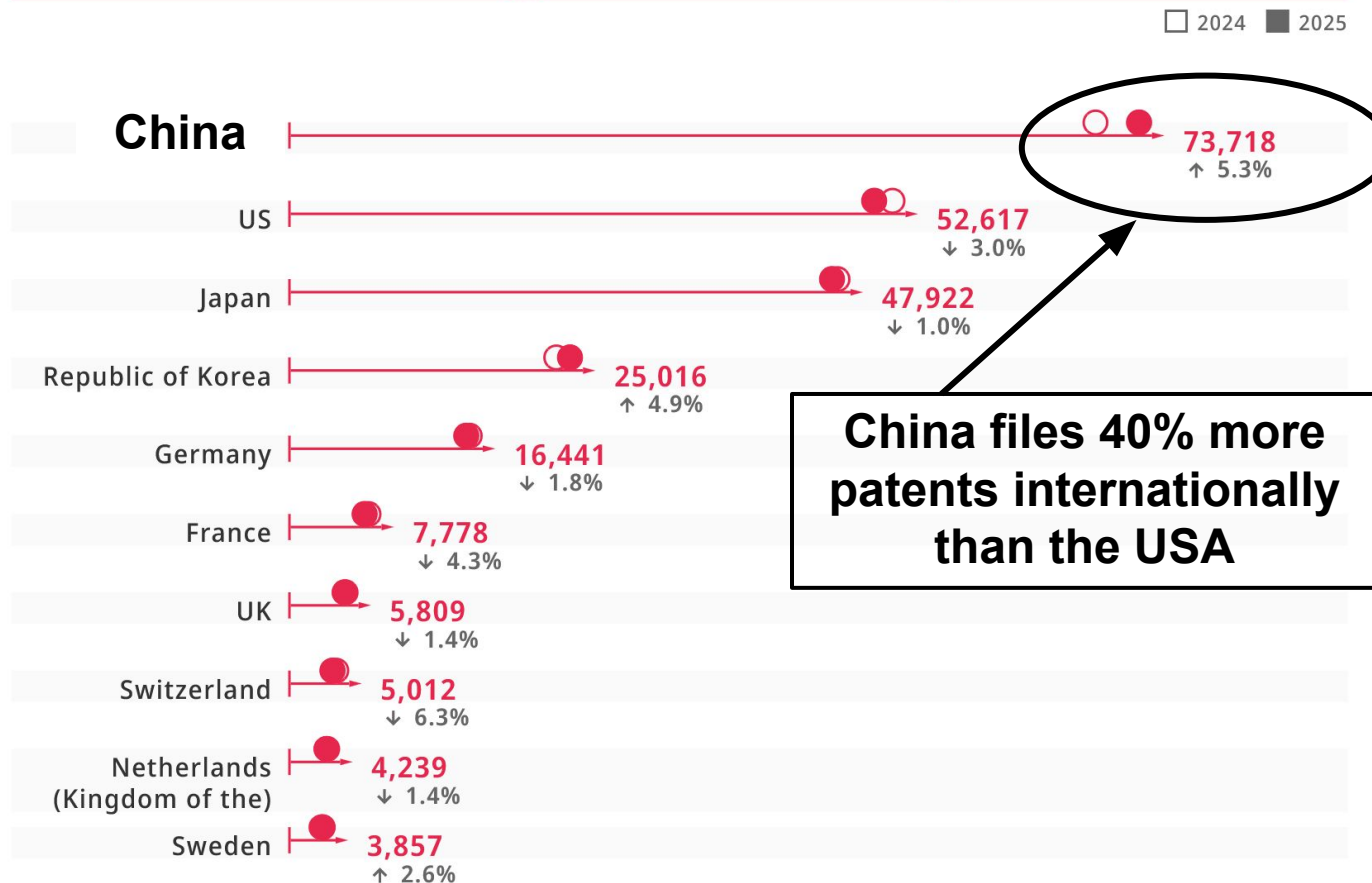


Applicants based in China filed around 1.8 million patent applications worldwide in 2024, followed by the US (503,271) and Japan (420,991). Patent applications filed worldwide by India-based applicants surged 19.2% globally in 2024, marking six straight years of double-digit growth, driven largely by growth in resident filings.

Source: WIPO Statistics Database, March 2026

# Top 10 countries by PCT applications – 2024/25

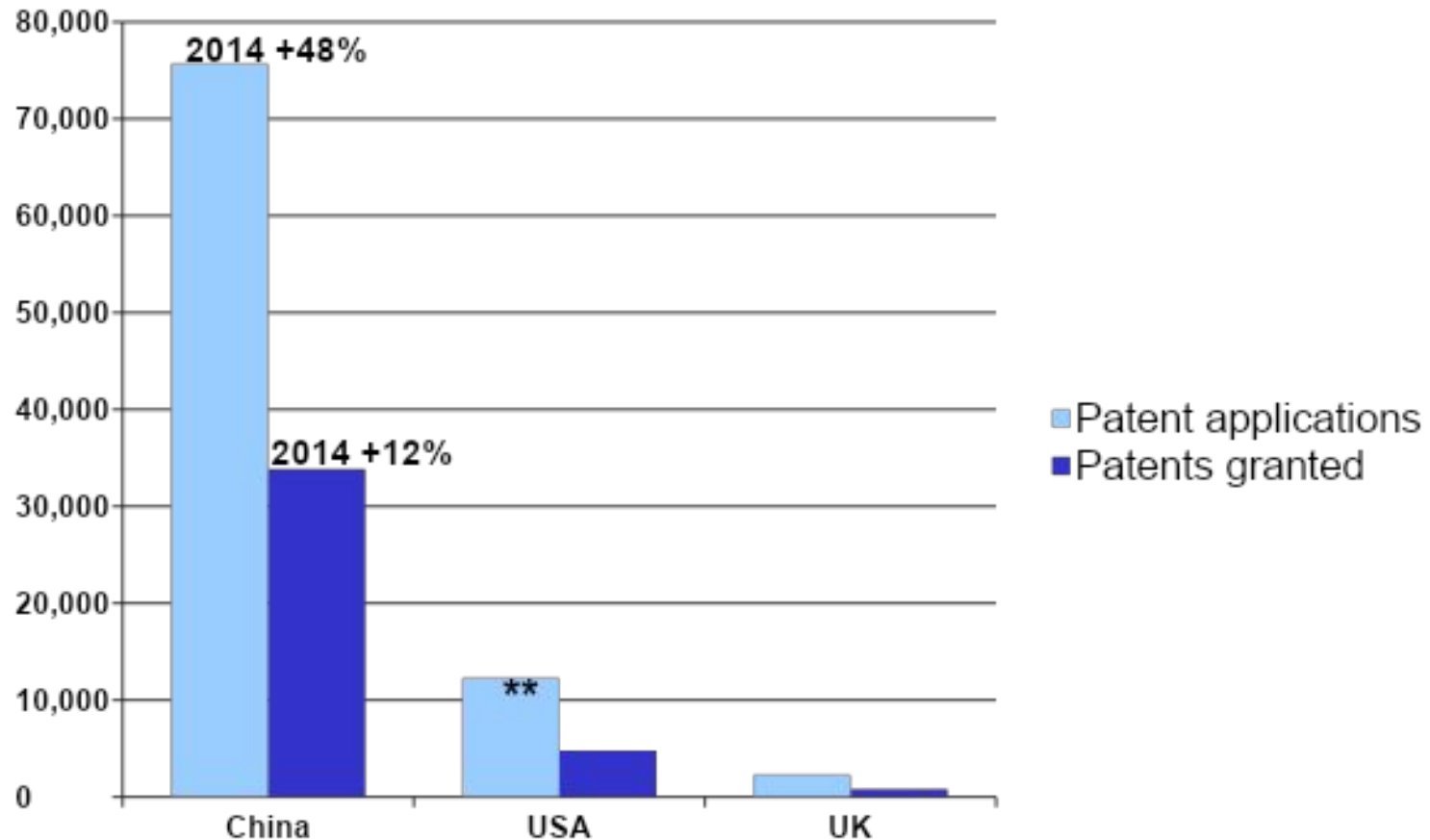
Which countries are the biggest users of the PCT System?



275,900 PCT international applications were filed in 2025, up 0.7% on 2024. Applicants from China filed the most PCT applications. The US, Japan, the Republic of Korea and Germany completed the list of the top five origins. The top 10 countries accounted for 87.9% of total applications in 2025.

Source: WIPO Statistics Database, March 2026

# University invention\* patents 2012/14



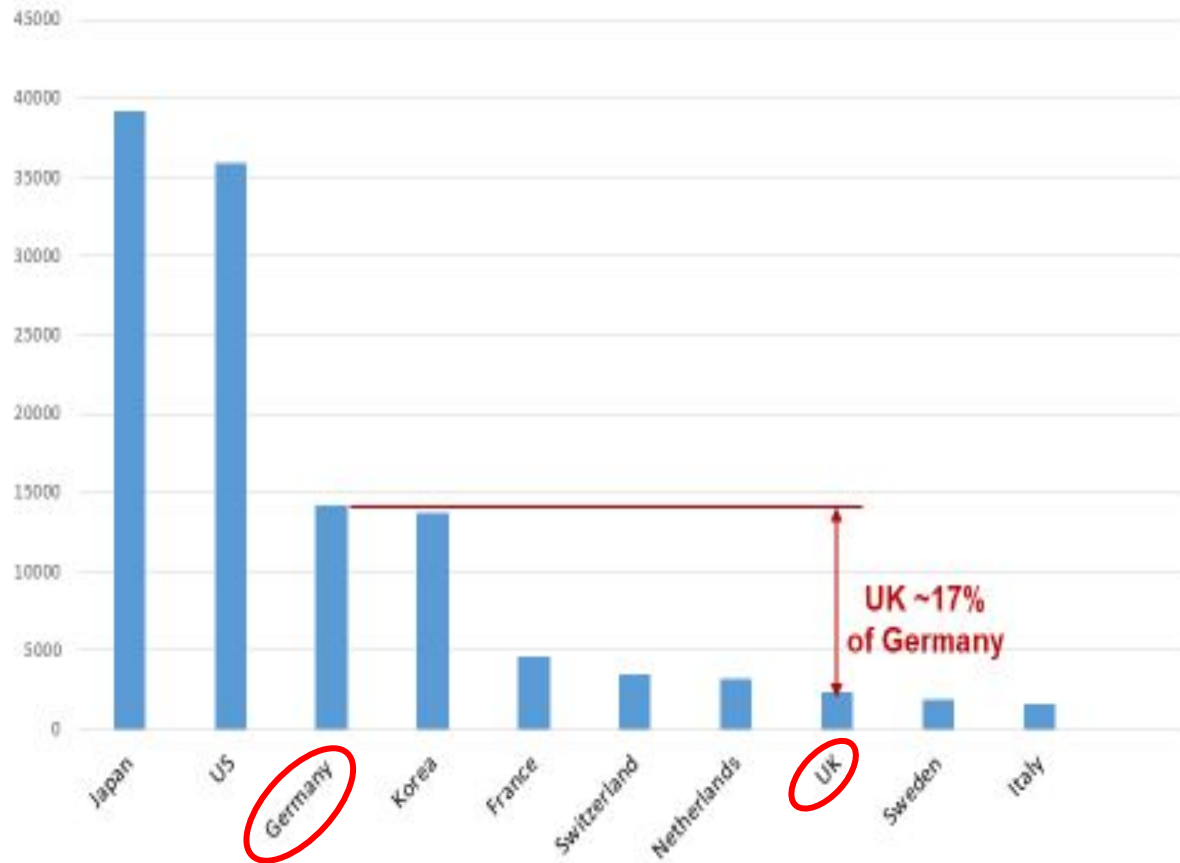
Sources: SIPO, AUTM, HEFCE. Excludes other research institutions

\* In the US "Utility" patents \*\* 2010 data

# Why complaints? *Self-inflicted wounds*

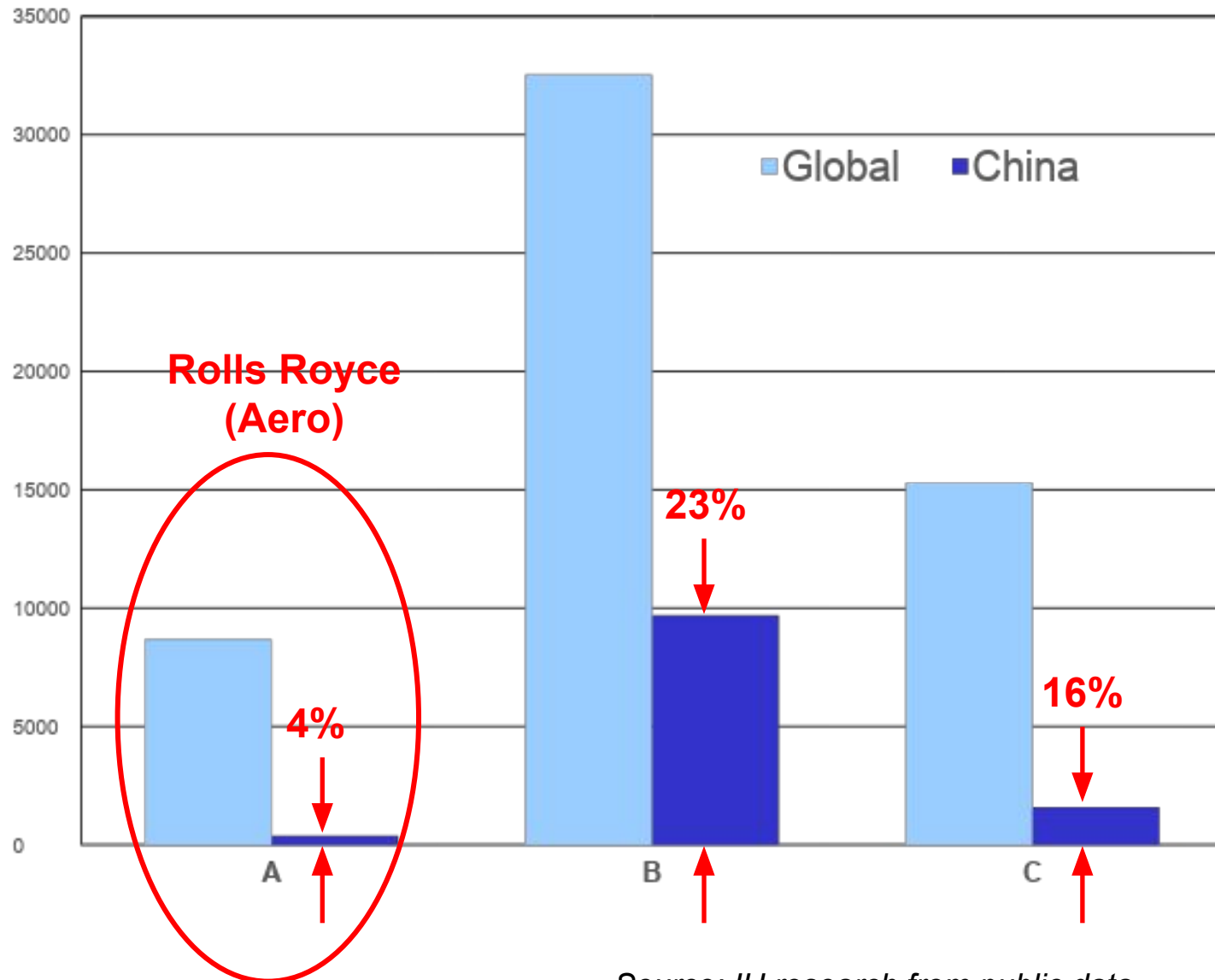
- **Not registering rights in China**  
*British companies far below their competitors*

# Top ten countries filing patent\* applications in China 2016



Source: SIPO 2016 \* Invention/US Utility patents

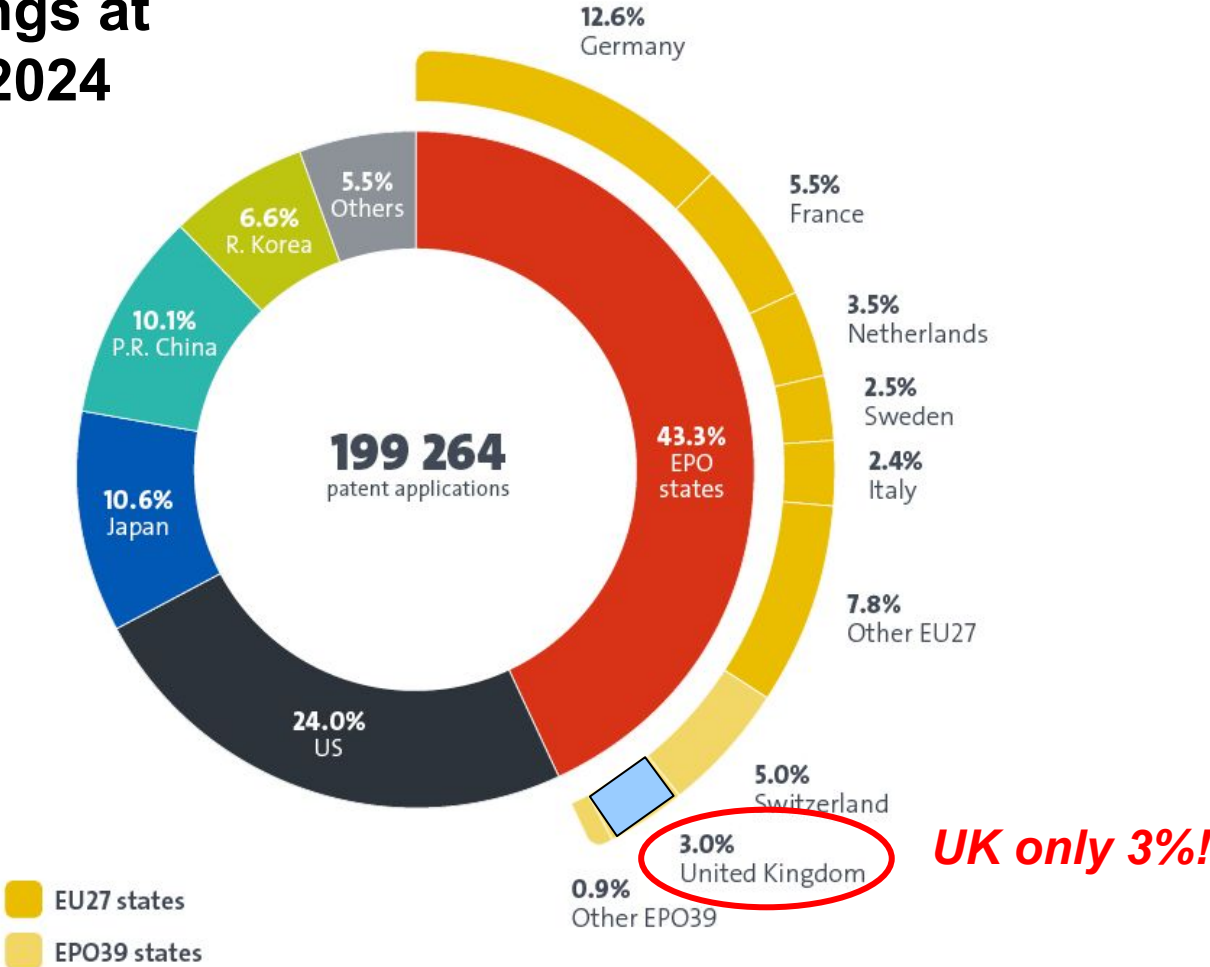
# Comparison of R-R patent filings in China



Source: IH research from public data.

# The UK does not do well!

## Patent filings at the EPO\* 2024



\*EPO - European Patent Office

# Conclusions

- **China will be the largest global economy**
- **Huge opportunities - - and risks:**
  - Wild West but with enforceable rules*
- **China does not see this as a zero-sum game - everyone can benefit from Chinese growth**
- **China is quite specific about focus areas – do your homework**
- **Chinese are very open to partnerships**
- **Many Chinese companies are outward looking and global**

# u3a

Further information available on IH website: <http://ianharvey-ip.com> :

- [u3a slides](#)

- [Briefing Note on IP and China](#)

- <http://ianharvey-ip.com/china/china-ip-article>