

Intellectual Property Insights: From the Higgs Boson to Hairbrushes and Holography

Prepared for
Physics Department, University of Oxford

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25 February 2025

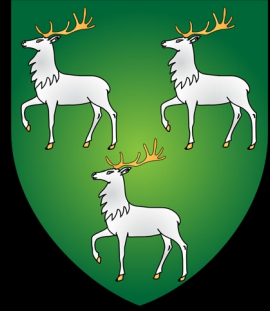


Overview



- **My Background**
- **IP Basics**
 - **The different types of IP (Intellectual Property)**
 - **Myth busting**
 - **Examples**
- **Careers in IP**
 - **Different types of IP career**
 - **My perspective & tips**

My Background



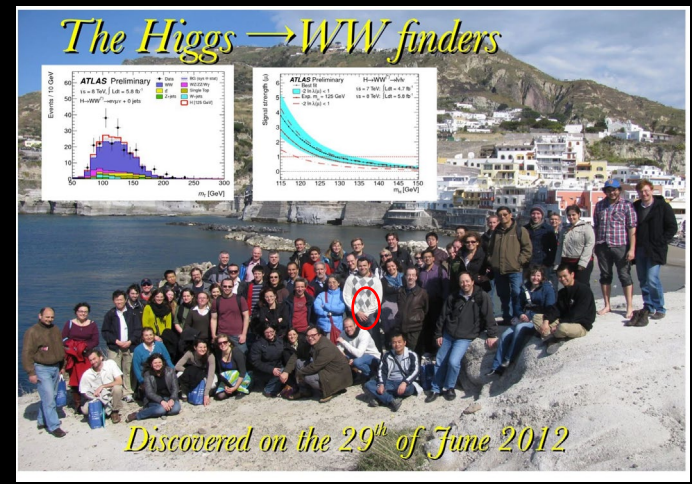
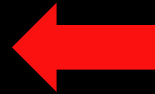
A Search for $H \rightarrow WW$ using a Matrix Element Discriminant and a WW Cross Section Measurement at ATLAS

Gemma Wooden
Jesus College, University of Oxford



This is submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy at the University of Oxford

Trinity Term, 2011

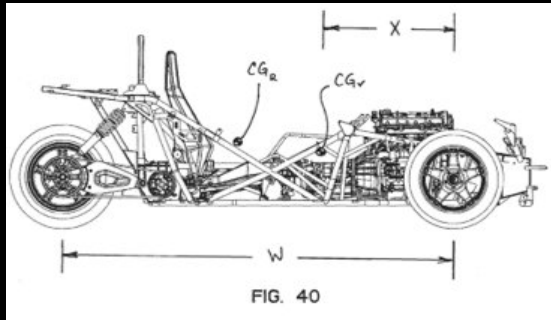


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What is Intellectual Property?

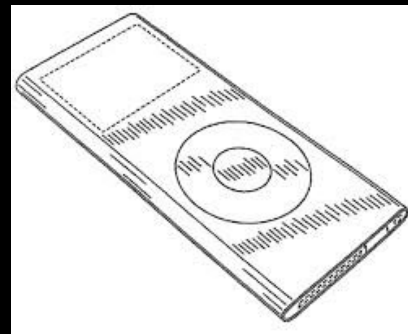
Patents



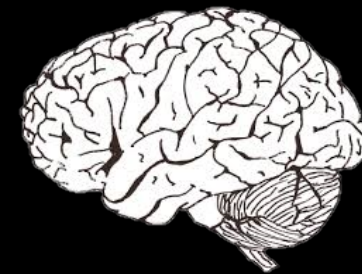
Trademarks



Copyright



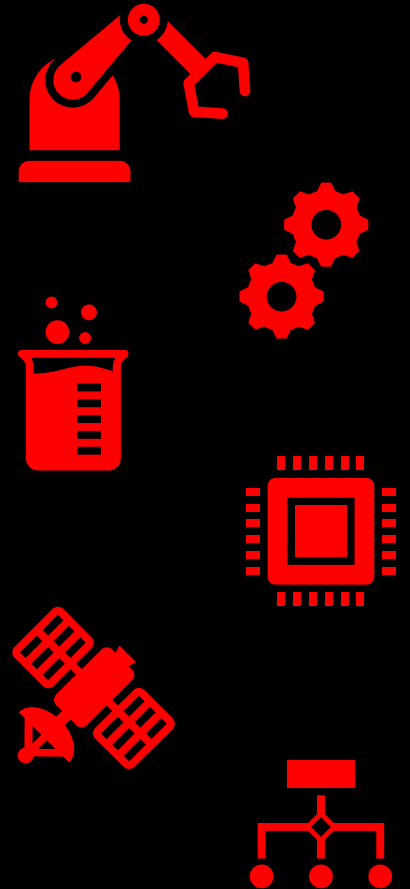
Designs



Trade secrets

Patents

- Protect **technical** innovations = “**inventions**”
 - Solutions to technical problems, relating to products or processes
- Legal “**monopoly/negative**” rights that protect for 20 years
- Take time and money to get granted
- Are **territorial**
- Get **published** (usually ~18 months after filing)



Benefits of Patents

- Protect **market** share
- Help attract **investment**
- Can be **negotiation** tools
- Can be used to generate **income** (e.g., sale, licensing)
- Can cut your corporate **tax** bill
 - E.g., UK government's Patent Box scheme

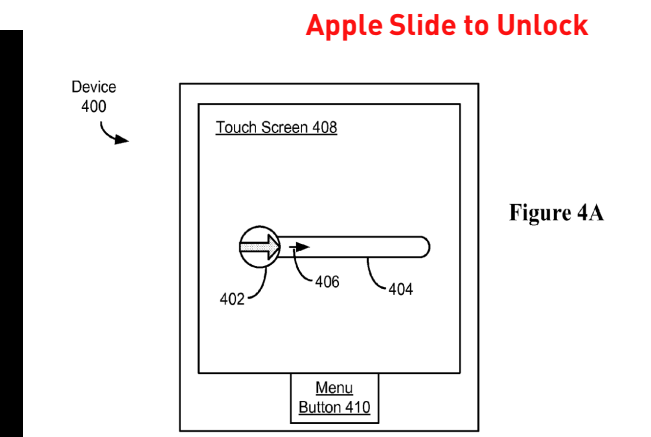
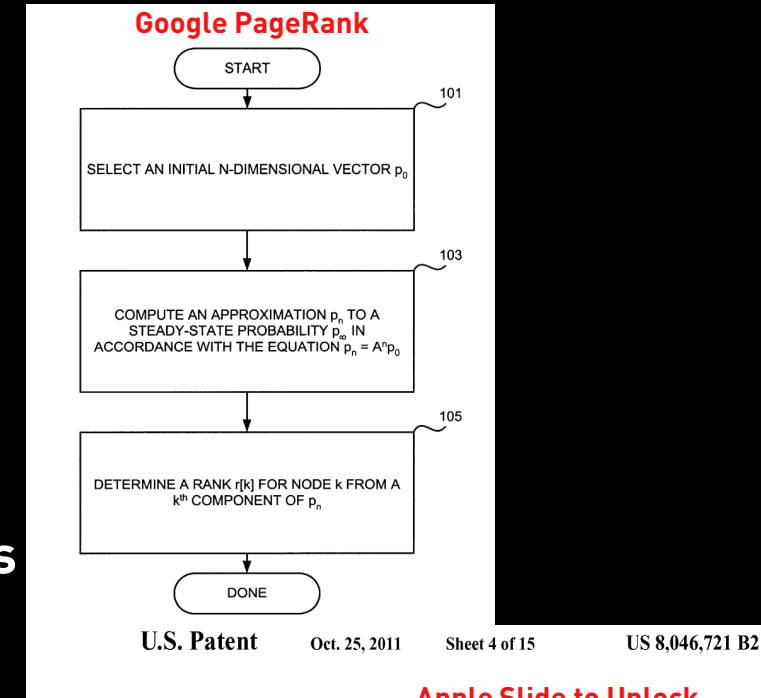


Requirements for Patentability

- **New**
- **Inventive**
- Capable of **industrial application**
- Certain subject matter is **excluded** from patentability, including:
 - Artistic works
 - Business methods
 - Mathematical methods
 - Computer programs
- **...AS SUCH!**
- If in doubt, ask a patent attorney

What is a Computer-Implemented Invention?

- **Computers, computer networks etc. in which at least one feature is realised by means of a computer program**
- **Examples include:**
 - **Control systems**
 - **Data security**
 - **User interfaces**
 - **Cloud computing**
 - **Computer vision**
 - **Speech recognition**
 - **AI**
 - **E-commerce**
 - **Distributed ledger tech**
 - **Database management systems**
 - **Natural language processing**
 - **Augmented reality**
 - **Virtual reality**
 - **Communication systems**
 - **Computer graphics**
 - **Quantum computing**



Anatomy of a Patent

- Description
 - Background
 - Summary
 - Detailed description
- Drawings
- Claims
 - Define **scope of protection**

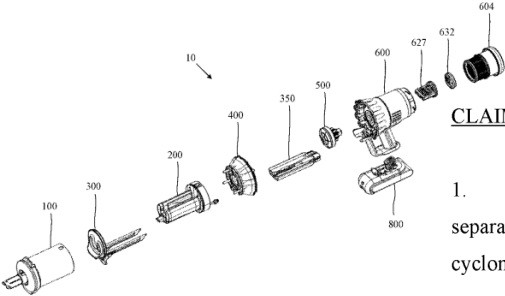
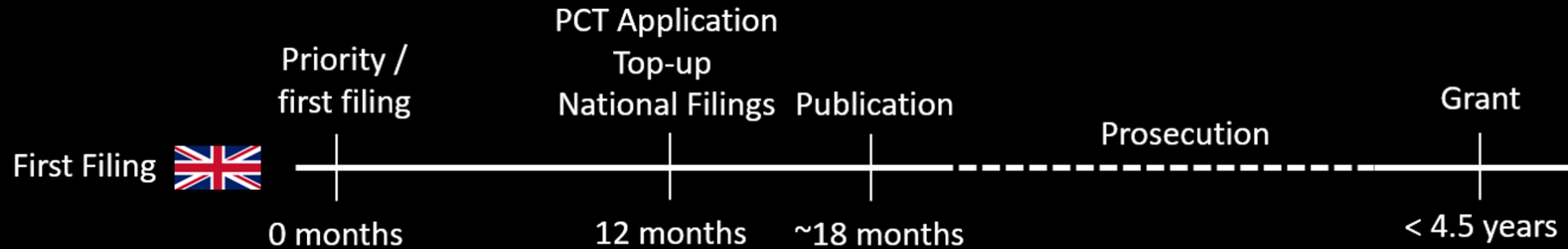
(12) UK Patent Application ⁽¹⁹⁾ GB ⁽¹¹⁾ 2620280 ⁽¹³⁾ A		
(43) Date of A Publication 03.01.2024		
(21) Application No:	2309932.8	(51) INT CL: A47L 5/24 (2006.01)
(22) Date of Filing:	29.06.2023	(56) Documents Cited: GB 2613864 A GB 2591797 A US 9237834 B2
(30) Priority Data:		(58) Field of Search: INT CL A47L Other: SEARCH-PATENT
(31) 2209549 (32) 29.06.2022 (33) GB		
(31) 2209565 (32) 29.06.2022 (33) GB		
(31) 2216680 (32) 09.11.2022 (33) GB		
(71) Applicant(s): Dyson Technology Limited Tetbury Hill, Malmesbury, Wiltshire, SN16 0RP, United Kingdom		
(72) Inventor(s): Mateusz Gugala Jonathan James Gray Ketan Patel		
(74) Agent and/or Address for Service: Dyson Technology Limited Intellectual Property Department, Tetbury Hill, MALMESBURY, Wiltshire, SN16 0RP, United Kingdom		
(54) Title of the Invention: Handheld vacuum cleaner Abstract Title: Handheld vacuum cleaner		
(57) A handheld vacuum cleaner comprising a non-cyclonic separation system 200 and a cyclonic separation system, wherein the cyclonic separation system (400, fig 2) is located downstream of the non-cyclonic separation system. The cyclonic separation system preferably comprises a plurality of cyclone bodies arranged about a central axis of the non-cyclonic separation system or about a central axis of the cyclonic separation system. The non-cyclonic separation system may comprise a filter located in a chamber and in use, airflow enters the chamber in a first direction and flows over the filter in a first direction. The filter may be U-shaped.		
		
CLAIMS		

Fig. 3

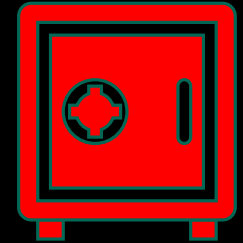
1. A handheld vacuum cleaner comprising a non-cyclonic separation system and a cyclonic separation system, wherein the cyclonic separation system is located downstream of the non-cyclonic separation system.
2. The handheld vacuum cleaner of claim 1, wherein the cyclonic separation system comprises a plurality of cyclone bodies.
3. The handheld vacuum cleaner of claim 2, wherein the cyclone bodies are arranged about a central axis of the non-cyclonic separation system or about a central axis of the cyclonic separation system, and wherein optionally each of the cyclone bodies has a cyclone body axis that is inclined relative to the central axis such that the cyclone body axes converge towards the central axis.

Patenting Timeline



Trade Secrets

- A form of **confidential information** that:
 - Is not generally known or readily ascertainable
 - Has economic value due to its confidential nature
 - Is subject to reasonable steps to keep it secret
- **Examples:**
 - **Financial** information
 - **Business** or **commercial** information
 - **Technical** or **scientific** data



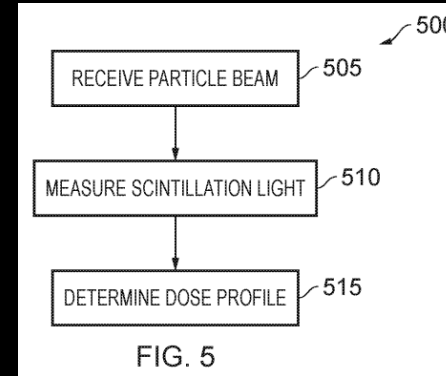
Patent or Trade Secret?

- For **technical** innovations, a decision has to be made

Patent	Trade secret
Published 18 months after filing	Inherently secret
Limited lifespan (typically 20 yrs)	Can remain protected indefinitely
Useful when use of the innovation is perceptible (e.g., via reverse engineering)	Useful when detection of third-party use is hard or impossible
Expensive to obtain	Cheap to protect
Can be used to claim tax benefits via the UK's Patent Box scheme	

Patenting Fundamental Research?

- Various considerations:
 - **Speed of development** of the field
 - Likelihood of **commercialisation**
 - Scope of protection
 - **Excluded** subject matter?
 - **Cost**
- No “one size fits all” answer – depends on nature of research
- Alternatives:
 - Publication
 - Keep confidential



WO 2021/069922 PCT/GB2020/052523

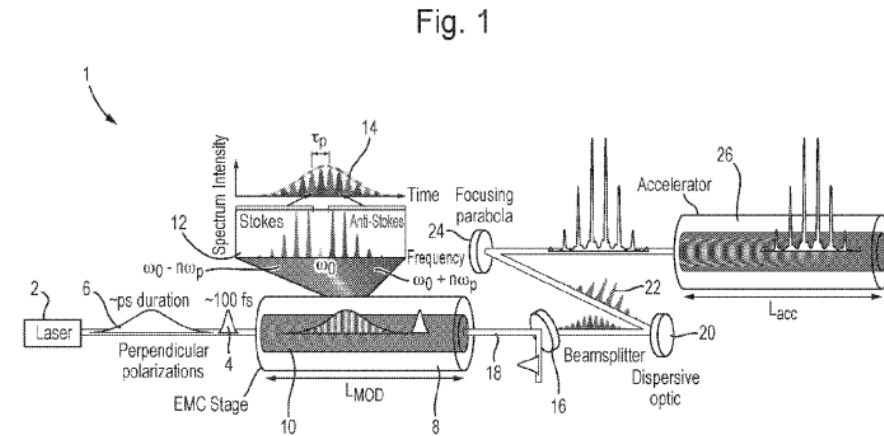
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METHODS AND APPARATUS FOR PARTICLE BEAM DOSE PROFILE MEASUREMENT

The presented technique relates to the field of measurement of properties of particle beams. More particularly, it relates to the measurement of a dose profile of a particle beam.

It may be desirable to measure properties or characteristics of particle beams, for example those used for particle beam therapy. Particle beam therapy is a radiotherapy technique in which ion beams are used for cancer treatment. Particle beam therapy has many advantages compared with photon or electron beam radiotherapy. In particular, the energy deposition density along the beam path has to be controlled to maximise the dose to the target and to minimise the dose to healthy tissue.

(54) Title: DRIVER FOR A PARTICLE ACCELERATOR



(57) Abstract: A driver (1) for a plasma particle accelerator includes a plasma (10) and laser system(s) (2) that generate first and second pulses. The first pulse (4) has a duration less than the electron plasma period. The second pulse (6) is temporally smooth and has a duration greater than the electron plasma period and less than the ion plasma period. The first pulse generates a plasma wake and the second pulse interacts with the wake to form red and blue-shifted sidebands. The driver also includes a dispersive optical device (20) that introduces a chromatic dispersion to shift the spectral phases of the red and blue-shifted sidebands, to temporally shift them relative to each other, so as to form coincident pulses (22) for generating a plasma wake in a plasma particle accelerator (26).

1 F230816-4CQ UNIVERSITY OF OXFORD 1

METHOD AND SYSTEM FOR DETECTING CHARACTERISTICS OF PARTICLES OR PARTICLE ENVIRONMENTS, AND METHOD OF TRAINING A MACHINE LEARNING MODEL Family unpublished; details not available.

Myth Busters

“ Copyright is the only form of protection available for software”

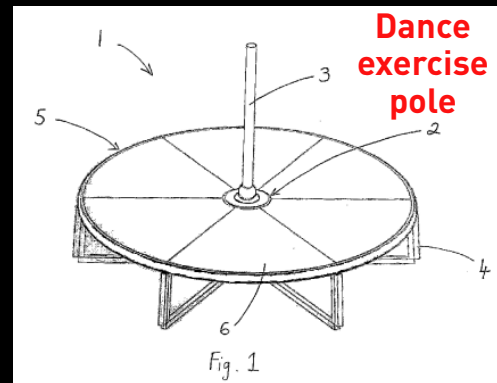
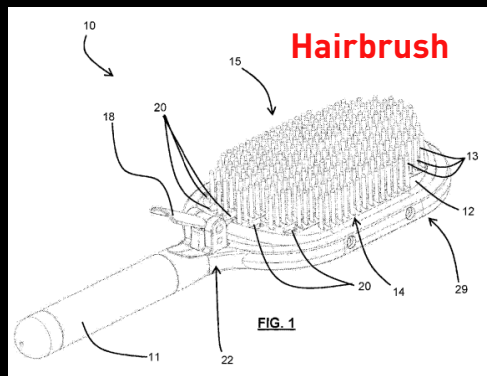
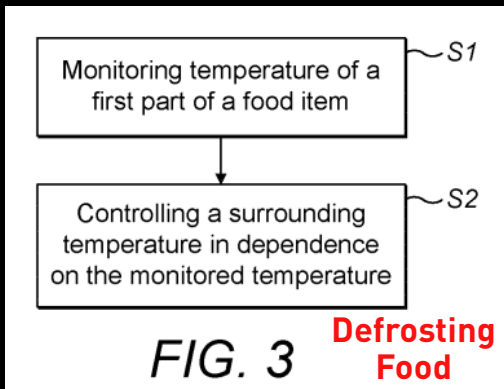
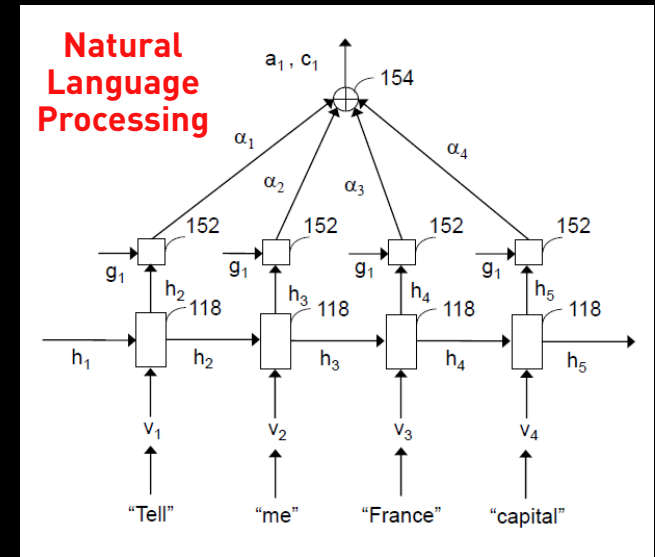
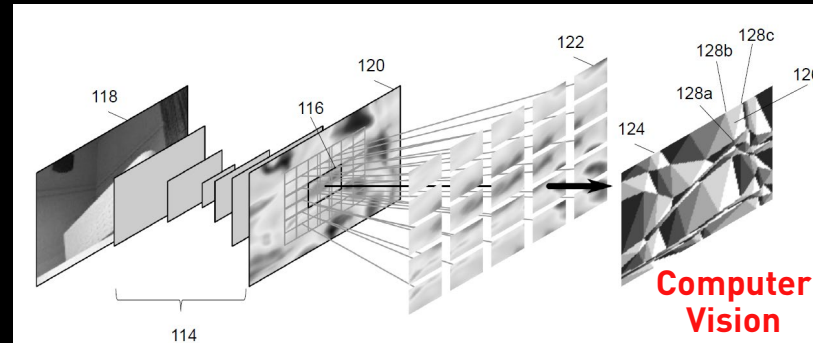
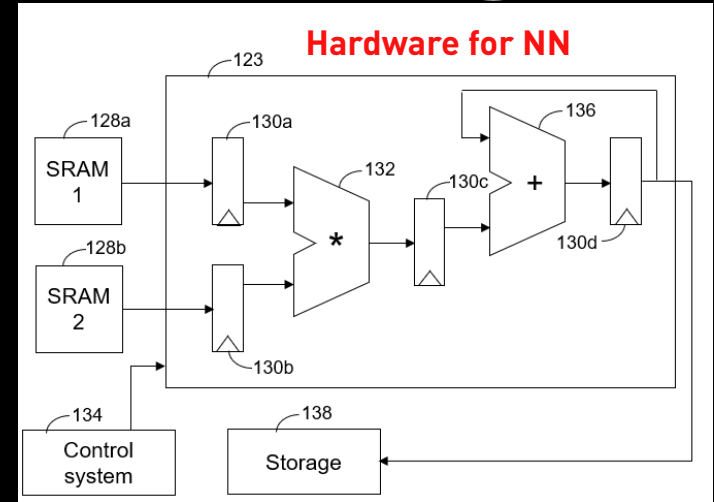
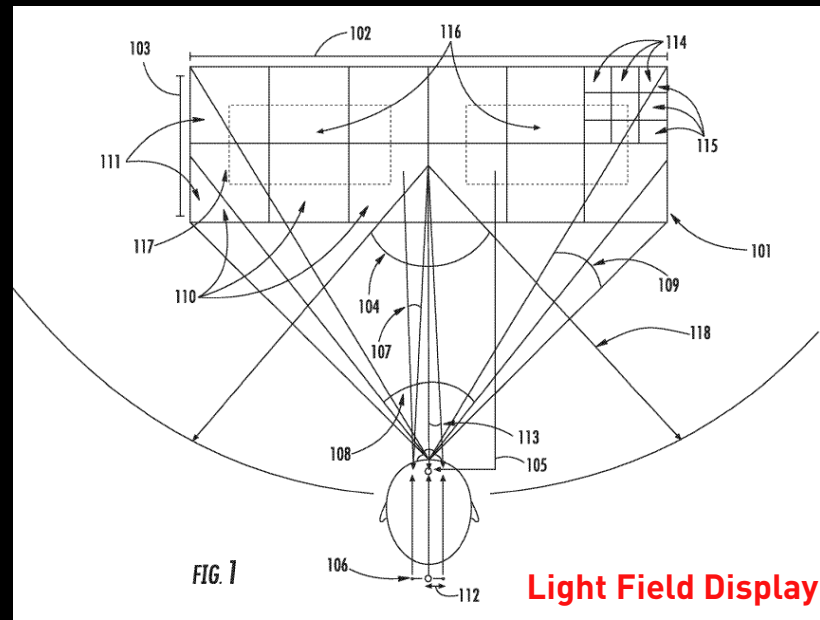
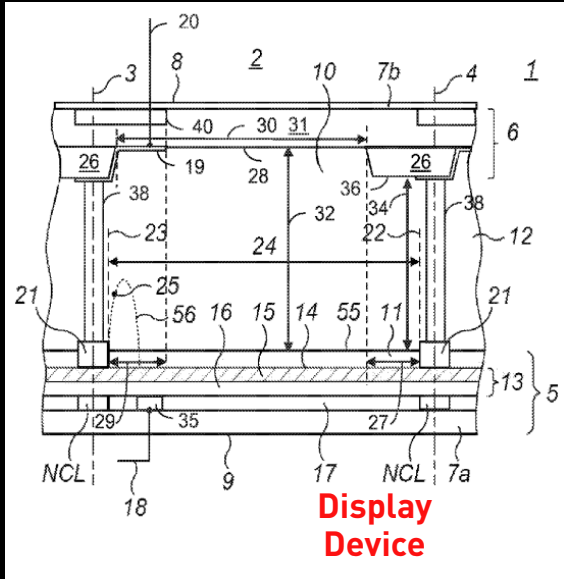
“ We don't have any intellectual property (IP) right now”

“ We don't have anything to protect; it is all about our know-how right now and building on that”

“ We don't want to end up in litigation so there's no point in getting a patent”

“ We have been friends for years; we don't need to waste money on a legal agreement”

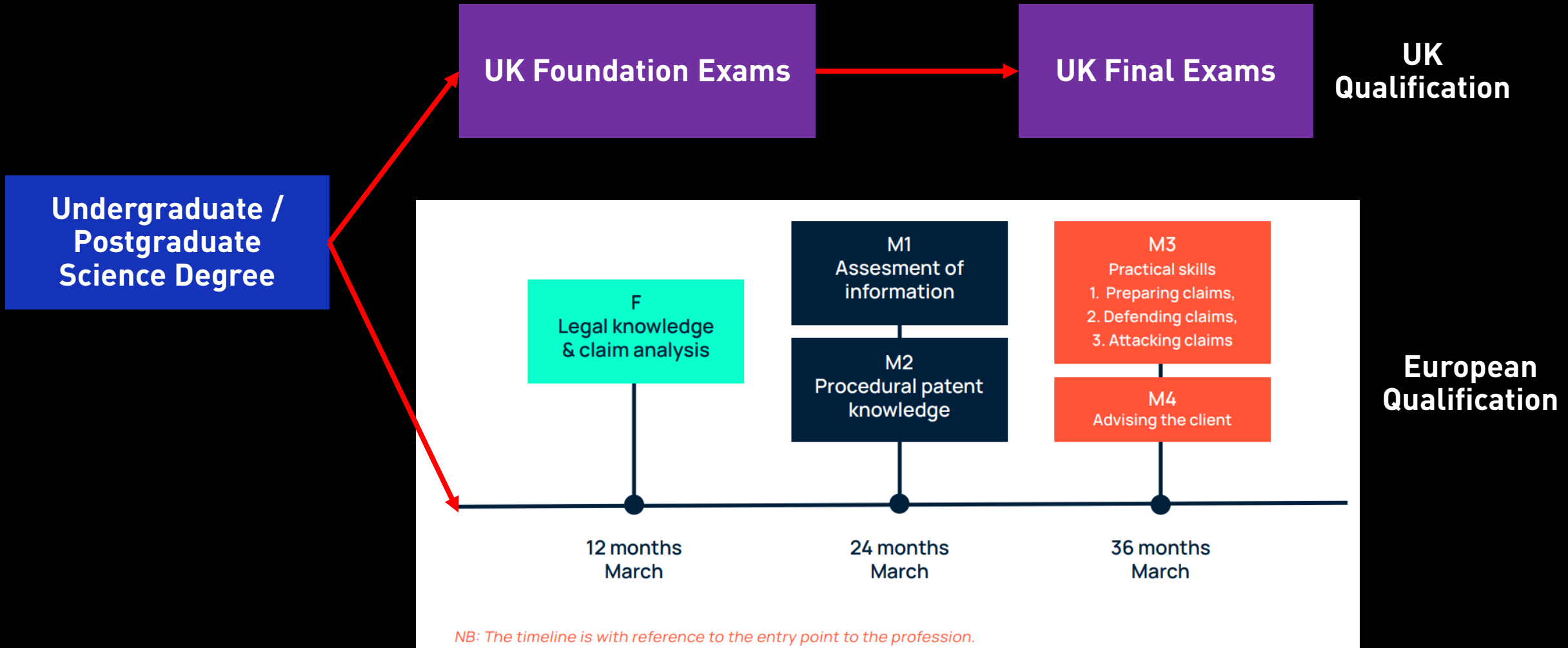
Examples



Careers in IP & key responsibilities

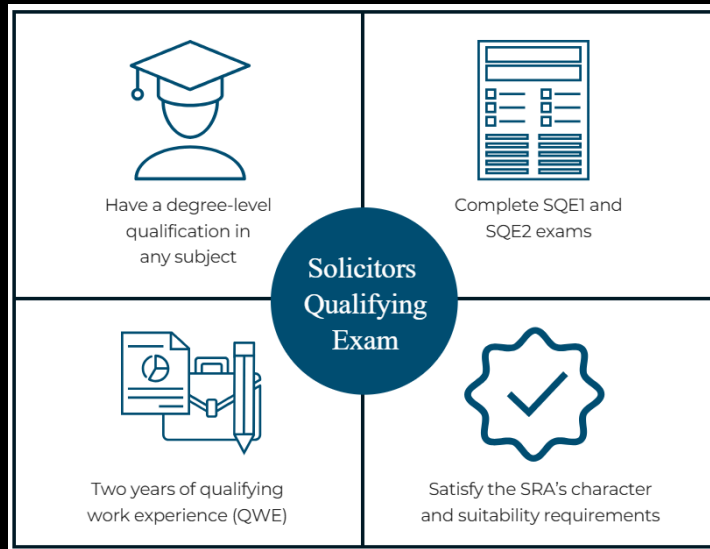
- **Patent attorney**
 - **Drafting patent applications**
 - **Prosecuting patent applications**
 - **Strategic IP advice**
 - **Litigation support**
- **IP Solicitor**
 - **Conducting IP litigation**
 - **Preparing and advising on IP agreements**
- **IP Barrister**
 - **Advocating for clients in court in IP trials**

Qualifying as a Patent Attorney

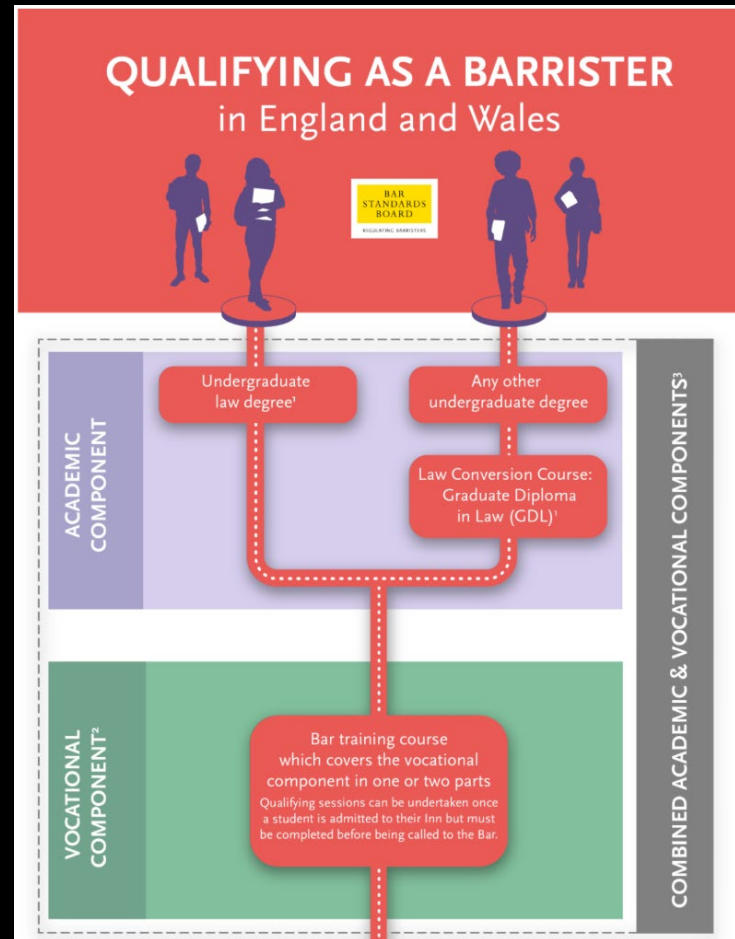


Qualifying as an IP Solicitor or Barrister

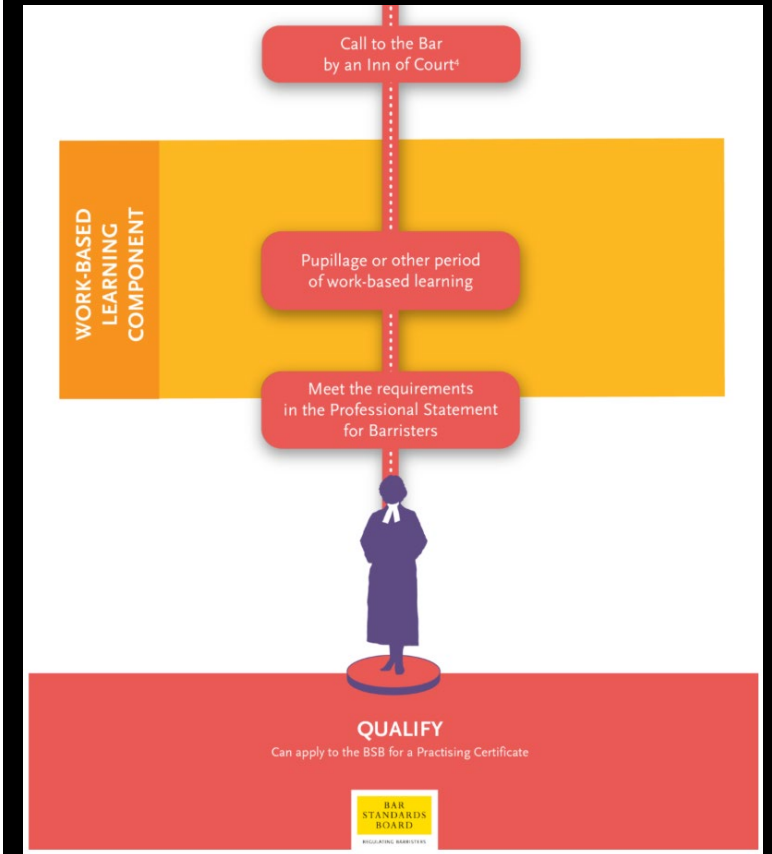
IP Solicitor



QUALIFYING AS A BARRISTER in England and Wales



IP Barrister



The Role of a Patent Attorney



- Combines **scientific** understanding with **legal and commercial** knowledge
- Lots of variety
- Lots of writing!
- Always more to learn
- Key skills:
 - Communication
 - Ability to rapidly understand new tech
 - Time management
 - Attention to detail

Patent Attorney Career Tips

- Consider an **internship**
- Open to career switchers - can do something else first
- Read patent application(s) before applying for jobs
- **Motivation** is important – consider why you want to become a patent attorney before applying
- Pay **attention to detail** on CV and cover letter!
- Be prepared to explain how everyday inventions work in job interviews

Thank you! Any Questions?

Dr Gemma Martynwood
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