



Patent valuation

Real case studies

Jim Asher
Athens: 20 March 2014

Outline

- Where does patent value arise?
- Reasons for patent valuation
- How purpose affects valuation
- Case study examples



What value do patents have?



- Patents provides **exclusive** rights
 - Maintain a premium price
 - Support a market share
- Value is in the **additional profits** they can protect
- Without a market, they may be a **liability**

IP

Who wants to know?

- Businesses
- Lawyers & Accountants
- Insolvency Practitioners
- Investors
- Lenders
- Tax authorities
 - Taxable events
 - Transfer pricing



What is the purpose of valuation?

- Value negotiation
- Litigation
- Tax/regulation
- Insolvency/probate



Background - global trends

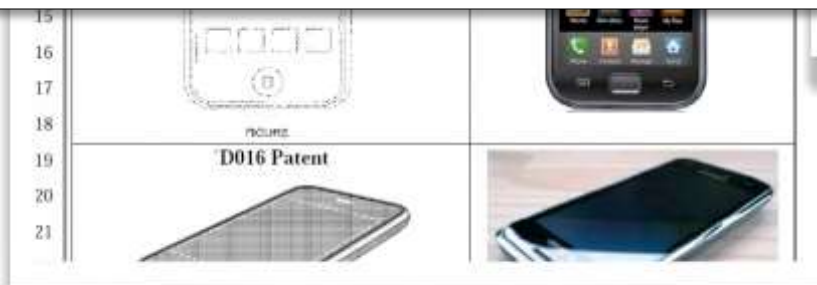
- Over 80% of company value is **intangible**
- IP **registration** is growing massively
 - Patent filing doubles each decade
- **Manufacturing** has been moving to new economies
- **Global recession** impact
- **Internet trading** accelerates
- IP **litigation** continues to grow
- Limited, but growing, **liquidity**



Apple vs Samsung 2012



Judge Pender's ruling in the case says that Samsung infringed Apple patents numbered D618,678, 7,479,949, RE41,922, and 7,912,501. Patent '678 is a design patent that Apple filed in 2007. Patents '949 and '922 focus on display and image technology found in Apple devices. Patent '501, meanwhile, focuses on Apple's headset plug-in technology.



Apple's filing (above) graphically contrasts Samsung's designs with its previous patents on the physical design of the iPhone. The iPhone 3GS design is contrasted with Samsung's Galaxy (left). Samsung's Galaxy Tab accessories (above right) appear so closely patterned after the iPad's that APC Mag observed last September "we can feel an Apple lawsuit coming on."



Market for patents

- Patent aggregators
- Patent enforcers
- New market entrants
- Patent auctions



Major patent trades - 2011

- Google buys 17,000 patent portfolio with Motorola acquisition
 - *\$735k/pat*

Last updated: August 16, 2011 12:38 am

Google snaps up Motorola Mobility

By Paul Taylor in New York and Richard Waters in San Francisco



[Google](#) has outlined its largest and boldest acquisition yet with the agreement to pay \$12.5bn in cash for [Motorola Mobility](#), the US smartphone company, in a deal that escalates the search company's rivalry with Apple and gives it control over more wireless patents.

Major patent trades - 2011

- Google buys 17,000 patent portfolio with Motorola acquisition
 - *\$735k/patent*
- Nortel: \$4.5bn sale of 6000 patents
 - *\$750k/patent*

Nortel patent auction goes to Apple/Microsoft/RIM consortium

by [Michael Rose](#)

Jul 1st 2011 at 6:45AM



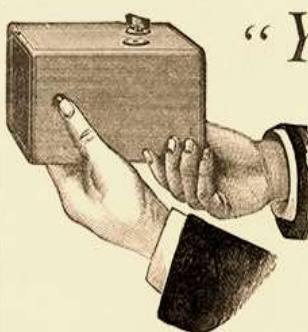
Back in April, the bankrupt telecom manufacturer [Nortel](#) put its [patent portfolio on the block](#) via a US\$900 million 'stalking horse' sale agreement with a relative newcomer to the market: Google. The arrangement set a minimum value for Nortel's intellectual property on the open market, and presumably put Google in a solid position to eventually bid for the final package.

Apparently the bidding got a little too stratospheric for the search/Android giant to keep up. Nortel [announced last night](#) that the successful bid was \$4.5 billion, and the patent suite (more than 6,000 inventions covering every corner of the mobile computing and telecommunications landscape) will go to an [industry consortium](#) full of [strange bedfellows](#): Microsoft, Apple, Ericsson, EMC, Sony and RIM.

Major patent trades - late 2012

- Kodak sells 1700 patent portfolio to manage insolvency
- Superconsortium formed to buy patents for \$94m
 - \$55k/patent
- Power of 'monopoly buyer'

Consortium: Intellectual Ventures, Adobe, Apple, Facebook, Microsoft, RPX, Amazon, Google, HTC, Samsung, Shutterfly, Fujifilm, Hauwei, RIM



The Kodak Camera

*“You press the button,
we do the rest.”*

OR YOU CAN DO IT YOURSELF.

The only camera that anybody can use without instructions. As convenient to carry as an ordinary field glass World-wide success.

*The Kodak is for sale by all Photo stock dealers.
Send for the Primer, free.*

The Eastman Dry Plate & Film Co.

Price, \$25.00 — Loaded for 100 Pictures. ROCHESTER, N. Y.
Re-loading, \$2.00.



How do we value
patents?

Free market valuation

- The price that a **willing buyer** would pay to a **willing seller** acting **independently** of one another in a **free market**



Valuation methods



- **Cost-based**

- What would it cost to replace the future capability of an asset?

- **Market-based**

- Are there similar transactions in the market to provide comparators?

- **Future income**

- What additional profits/cash will the IP generate in the future?

*...plus **experience and independence***

Cost-based approach

Time-profile of:

- Historic investment in R&D
- Development costs
- Patent filing and prosecution costs

Discount factors:

- *Obsolescence*



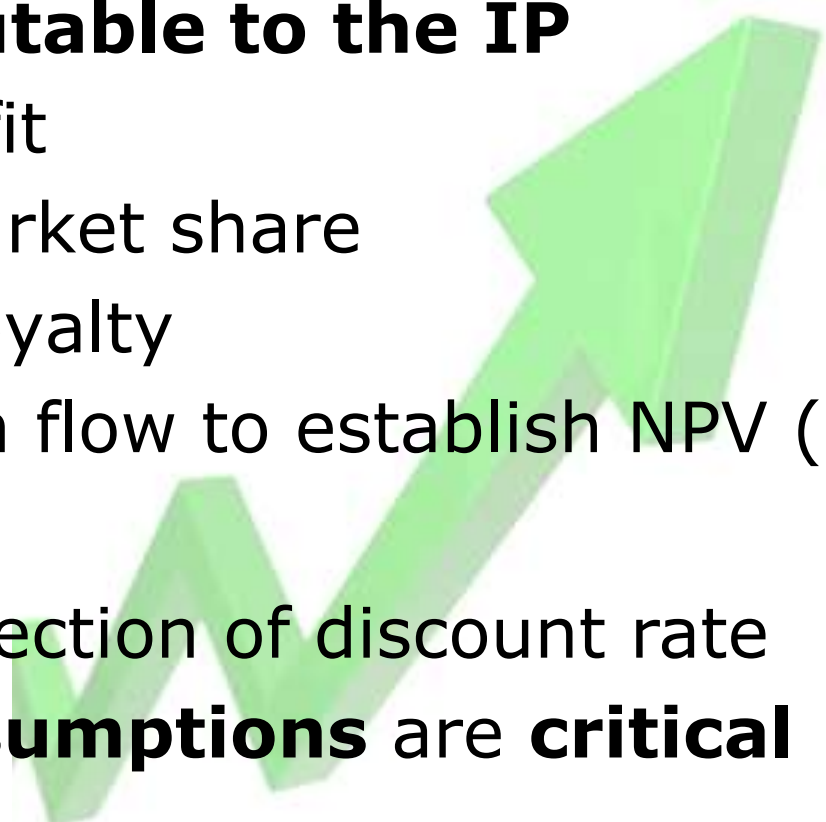
Historic cost...not a good indicator of future value

Market-based valuation - IP

- Are there similar transactions in the market place?
 - Are they similar technically?
 - Are they free-market transactions?
 - How recent are they?
- *IP deals are inherently highly varied*
- *Limited to what is available in publicly accessible information*



Future income approach

- Scenario-based model of future cash flows that are **attributable to the IP**
 - Premium profit
 - Additional market share
 - Relief from royalty
 - Discounted cash flow to establish NPV (with terminal value)
 - **Risk-based** selection of discount rate
 - **Inputs** and **assumptions** are **critical**
- 

Future income approach

'Relief from Royalties' method

- Identify the relevant IP
- If a business owns IP, what does it save by not having to pay royalties for its use?
- Search for benchmark royalty rates in public information sources
 - e.g. US SEC company reports
 - Subscription services



Patents have limited life

- 20 years from filing
...assuming that renewals
have been paid!



Patents – factors affecting value

- Market factors – market pull, market size
- How well does the patent capture a technical area?
 - Alternative solutions
 - Breadth of disclosure and strength of claims
 - Workarounds
- Patent validity
 - applications may not be granted
- Clarity of ownership
- Discoverability
- Geography

Revenue projections

- Baseline: historic and current business performance
- Review business projections for future years
- Consider risks and discount future value for risks
 - Technical
 - Legal
 - Commercial

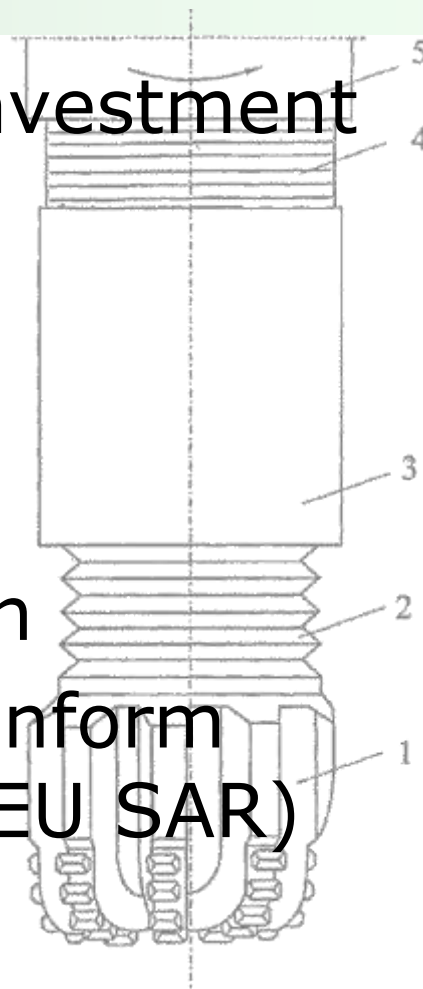




Case Study 1

Background / Technology

- Public-sector + university R&D investment
- Well drilling technology
 - significantly improves drilling speed
- Covered by 4 patent families
 - in up to 28 countries
- Alternative licensees in discussion
- Valuation of patents required to inform negotiation (and to comply with EU SAR)



Factors affecting valuation

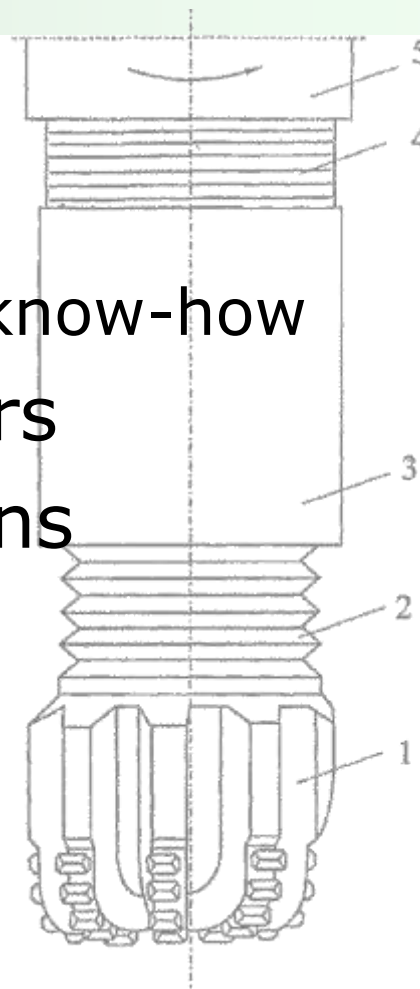
- Significantly leveraged cost benefits
- Successful trials at near-production scale, but only in lab conditions
- Patent status
 - patents form a coherent cluster in the patent landscape
 - distinct from other patents reviewed
 - geography match to main market
- Licensees in play



Source: Thomson Innovation

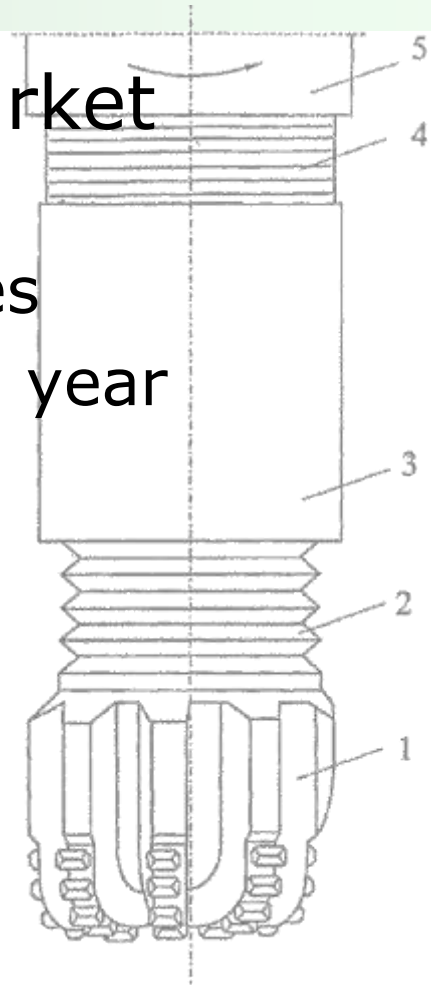
Key assumptions

- Modular/fit existing drill strings
- Manufacture by existing player
 - royalty-bearing licence to patents, know-how
- Non-exclusive terms for end-users
- Offshore and on-shore applications
 - greater value off-shore
- Oil & gas applications only



Value calculation

- Information from confidential market reports (supplied)
 - Number of rigs, drilling ships, barges
 - Utilisation and growth stats/year on year
 - Forward CAGR
- Additional assumptions
 - Patent geography cover: 80%
 - 3 units per year per rig (offshore)
 - 1 unit per year per rig (land)



Future Income approach

- Consider projected revenues and profits
- Use a royalty rate taking account of market benchmarks
- Estimate the net cash flows by year
- Consider risks and apply discounts
- Calculate net present value of future cashflows
 - use a risk-based discount rate

Royalty benchmarks

Year	Licensor	Licensee	Product	Form/Payment	Unit of Royalty	Royalty
2004	Alberta Energy Holdings Inc	Vedisy Inc	Abrasive Fluid Jet Technology	Licence - multi-exclusivity/USA and worldwide	Gross revenue per well	2% (subject to a min of £1000 per well)
2003	Carl W Landers	Verdisys Inc	Landers Horizontal Drill for	Exclusive licence	Gross revenue (inc	10% on rig 5% on other rigs
2001	Flowra					10%
1996	Crown Corp					2% (determined by Master Licence with third party)
2004	CCore and Li					4%
2006	Mitche International Pty; Pacific Asia China Energy Inc	Drilling Corp.	drilling system	in China		50%
2006	Total Well Solutions LLC	Flotek Industries Inc	Downhole separator technology	Multi-exclusive Worldwide licence	Gross revenue	7.5%
2008	Euroslot SAS	USR Technology Inc	Downhole screen filters	Exclusive Worldwide licence	Sales	8%
2002	Shell Technology Ventures Inc	Weatherford International Inc	Expandable solid tube technology	Multi-exclusivity worldwide licence	Net invoice price	6%

Royalty rates (excluding no 6 (profit share in JV)):

2%-10%, average 5.9%

No indication of a premium for exclusivity

Selected range: 5%-7%

Offshore market model - benefits

	USD\$m	Growth:	6.0%	6.0%	6.1%	6.1%	6.1%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
	Year:	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MODU market (Global)		48650	51569	54663	57998	61535	65289	66921	68594	70309	72067	73869	75715
MODU Leasing		28710	30433	32259	34226	36314	38529	39493	40480	41492	42529	43592	44682
Geographical cover	70%	20097	21303	22581	23958	25420	26971	27645	28336	29044	29770	30515	31278
Market share by licensee	10%	2010	2130	2258	2396	2542	2697	2764	2834	2904	2977	3051	3128
Market penetration					1%	5%	10%	20%	40%	60%	80%	90%	90%
Cost saving benefits	20%	0	0	0	5	25	54	111	227	349	476	549	563
Cost-saving share USD\$k	5%	0	0	0	240	1271	2697	5529	11334	17427	23816	27463	28150
DCF													
Discount Factor				1	2	3	4	5	6	7	8	9	10
	27.5%		100%	78%	62%	48%	38%	30%	23%	18%	14%	11%	9%
Discounted value				£0	£147	£613	£1,021	£1,641	£2,638	£3,182	£3,410	£3,084	£2,480
											Existing	NPV	£18,216 k
											Terminal growth:	TV	£9,017 k
												Total:	£27,233 k

NPV Calculation – off-shore

	USD\$m	Growth:	6.0%	6.0%	6.1%	6.1%	6.1%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
	Year:	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MODU market (Global)		48650	51569	54663	57998	61535	65289	66921	68594	70309	72067	73869	75715
Unit Sales	USD\$m										2.5%	2.5%	2.5%
	Year:										2020	2021	2022
MODU market (Global)											542	549	556
Jack-up rigs											223	226	229
Semi-submersible											71	72	73
Drillships											223	226	229
Drilling barges											1060	1073	1087
Total rigs											80%	80%	80%
Utilisation											848	859	870
Total active rigs											679	687	696
Geographical cover	80%										136	137	139
Market share by licensee	20%										80%	90%	90%
Market penetration											326	371	376
Number of Units	Multiplier (per y)										29313	33390	33807
Unit sales (\$k)	90 \$US										18912	21542	21811
	USD/GBP	1.55											
Notional royalties	6.0%										1759	2003	2028
Less corp tax charged at:	20%				97	387	756	892	1075	1263	1455	1652	1628
DCF													
	Discount Factor			1	2	3	4	5	6	7	8	9	10
	27.5%		100%	78%	62%	48%	38%	30%	23%	18%	14%	11%	9%
	Discounted value			£0	£60	£196	£317	£314	£300	£277	£252	£225	£179
											Existing NPV		£2,119 k
											Terminal value		£476 k
											Total:		£2,595 k

10-year NPV: £2,119k
 Terminal value: £476k
 Total: £2,595k
 Valuation range: £2.0m-3.2m

Land-based market model - benefits

	USD\$m	Growth:	8.6%	5.8%	-0.8%	5.0%	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%	3.5%	
	Year:	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Land drilling														
Rigs drilling		4648	5049	5340	5297	5564	5842	5988	6138	6291	6449	6610	6841	
Geographical cover	70%	3254	3534	3738	3708	3895	4090	4192	4297	4404	4514	4627	4789	
Market share by licensee	10%	325	353	374	371	389	409	419	430	440	451	463	479	
Market penetration					1%	5%	10%	20%	40%	60%	80%	90%	90%	
Cost saving per y/rig (USDk)	2000	0	0	0	7	39	82	168	344	528	722	833	862 m	
Cost-saving share USD\$k	5%	0	0	0	371	1947	4090	8384	17186	26424	36113	41642	43100	
DCF														
	Discount Factor			1	2	3	4	5	6	7	8	9	10	
	27.5%		100%	78%	62%	48%	38%	30%	23%	18%	14%	11%	9%	
	Discounted value			£0	£228	£940	£1,548	£2,488	£4,001	£4,824	£5,171	£4,677	£3,796	
											Existing	NPV	£27,672 k	
											Terminal growth th:	0%	TV	£13,805 k
												Total:	£41,477 k	

NPV Calculation – land-based

Unit sales analysis		USD\$m	Growth:	8.6%	5.8%	-0.8%	5.0%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%	2.5%
Year:	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022		
Land drilling														
Rigs drilling										6449	6610	6841		
Geographical cover										4514	4627	4789		
Market share by licensee										451	463	479		
Market penetration										50%	50%	50%		
No of rigs with technology	Multiplier (226	231	239		
Unit sales (\$k)										20313	20821	21550		
	USD/GBP									13105	13433	13903		
Notional royalties										1219	1249	1293		
	Less corp tax charc									981	1006	1043		
	DCF													
	Discount F									8	9	10		
	Discounted									14%	11%	9%		
										£140	£113	£92		
										Existing	NPV	£981 k		
											TV	£245 k		
											Total:	£1,226 k		

10-year NPV: £981k

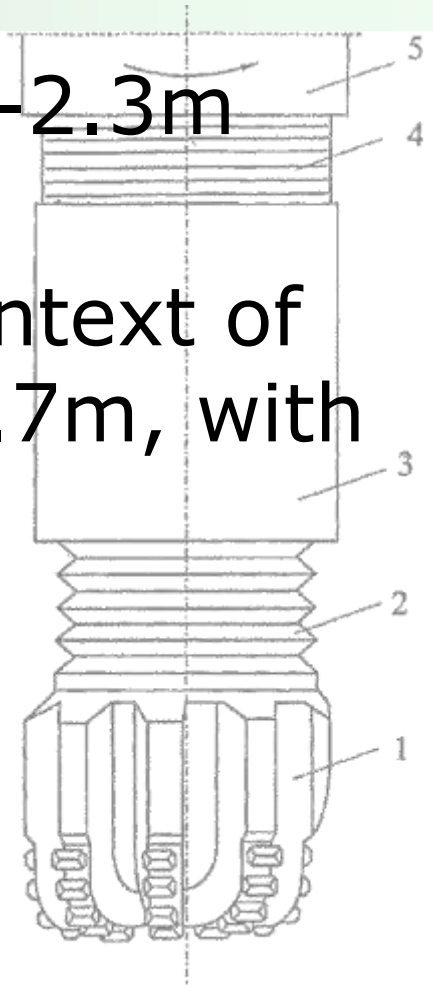
Terminal value: £245k

Total: £1,226k

Valuation range: £0.9m-1.5m

Opinion

- NPV of the Historic costs: £1.7-2.3m (background context only)
- Value of patent portfolio (in context of the business model): £2.9m-4.7m, with a central value of £3.8m

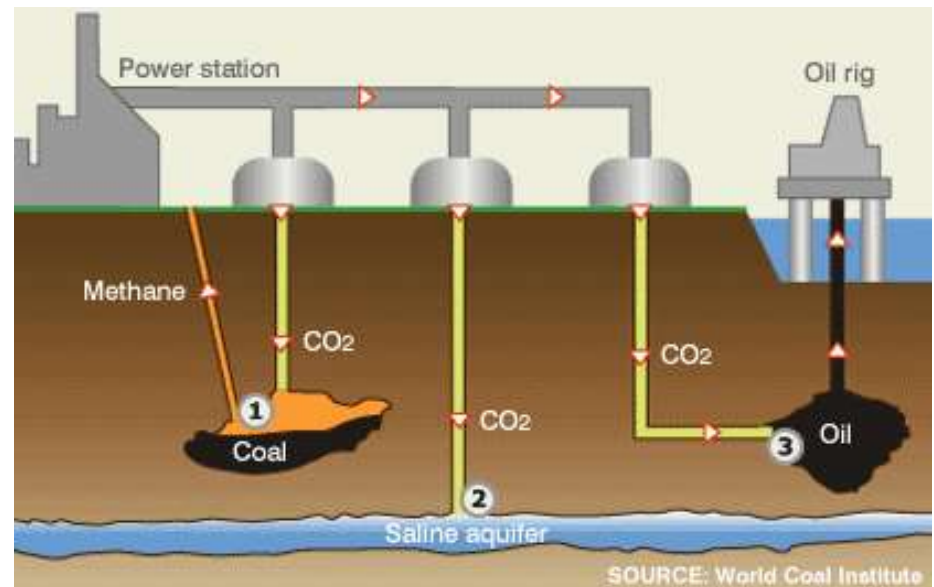




Case Study 2

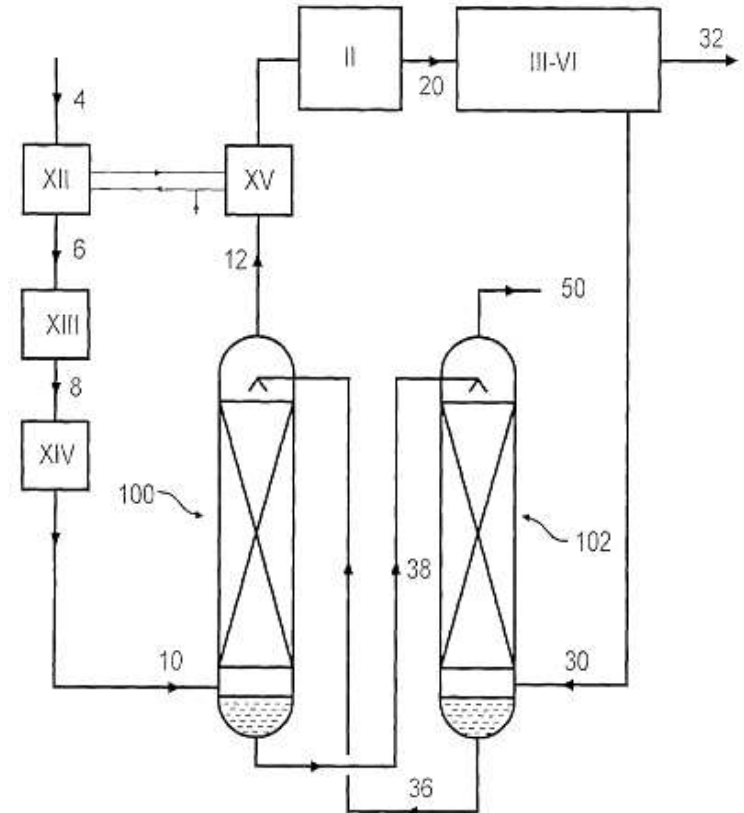
Background / Technology

- Carbon-Capture process (CO₂ storage)
- Private inventor, private joint investors
- Inventor had died suddenly
- Valuation of patents to enable probate



Factors affecting valuation

- Technology had not been demonstrated in practice
- No commercial deals in play
- Highly speculative early-stage investment
- Loss of key technologist/champion



Value calculation

- Historic costs do not reflect value
- No good market comparators
- Focus on Income approach

Key assumptions

- Long-term play – requires many years of pilot-stage and full-scale validation before it becomes fully commercial
- Level of revenues – set by government backing of demonstrators, and then commercial take-up
- Market penetration rate

Change happens!



Key assumptions

- Government cancelled remaining CCS pilot project in UK
- We estimated additional slippage in plan of about 2 years
- Impact on NPV due to delay, on top of continuing costs, amplified due to high discount rate

Opinion

- Value of the patents: £2.5k-£8.3k, with a central value of £5.4k
 - Speculative nature of the future scenario
 - High levels of technical risk
 - High levels of commercial risk

Value calculations

- Critical elements
 - Robust inputs
 - Valid assumptions
 - Accounting for risks
 - Appropriate benchmarking
- It is not just maths!

$$V = \sum V_n 1/(1+r)^n$$

Reality checks

- Use of more than one approach
 - Does the result 'feel right'?
 - Uncertainties reflected in a value **range**
 - **Articulation** of value can be more important than the number
-
- Real **events** can make a real difference...!



Summary

- Market background to patent valuation
 - limited liquidity
 - some big deals
 - significant volatility
- The need for valuation is increasing – for a range of different purposes
- Like other assets, patents can be valued
- Case studies demonstrate complexities of the real world

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