



Patentability of Computer Implemented Inventions

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Simon Davies

Chair CIPA Computer Technology Committee

Director, Altair IP Ltd; srd@altairip.co.uk

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Excluded Subject Matter in EPC

- Article 52(1) EPC – patents available for inventions
- Article 52(2) EPC – certain subject matter is not an invention
 - discoveries, scientific methods, mathematical theories, aesthetic creations, mental acts, rules for games, business methods, computer programs, presentation of information are excluded
 - since not an invention, **cannot be patented**
 - these things just aren't inventions
 - (no positive definition of invention in original EPC)
- Article 52(3) EPC: only excluded “as such”

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EPC 2000

- Article 52(1) amended to state that patents available in “all fields of technology”
 - language from WTO TRIPS agmt 1995
 - became law December 2007
 - inclusive language might be helpful but hasn’t made much of a difference
 - *T 0489/14* reasons 16 – provisions “not materially changed”
 - (UK law not modified!)

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Legal and Policy Problems

- We don’t really know why exclusion exists
 - a long time ago in computing terms (1973)
 - does it even matter what they thought back then
 - (picture Altair 8800, 1975, first micro-computer)



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Vicom

- *T208/84*
 - case related to 2-D data convolution
 - hardware and software implementations
 - initially rejected as mathematical algorithm
 - BoA held technical process - providing claims restricted to image processing
 - BoA allowed claims to method and system for implementing technical process
 - would cover software implementation
 - technical contribution – enhanced speed

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Post-Vicom

- EPO primary focus on technical contribution/technical effect
 - individual exclusions less significant
- Could patent control of external or internal technical process (and related system claims)
 - still basic EPO (and UK) approach

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Claim formats

- Method and System claims
 - however, for software products, this would generally be (directly) infringed by end user
 - often your customer – not a competitor
 - possibility of indirect infringement
 - providing essential element of invention
 - (no inducing infringement per se in UK)
 - more complicated case to run

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Computer Program Claims

- *IBM 1173/97*
 - claims allowed to “computer program” per se (corresponding to allowable system/method claims)
 - seen as fundamentally the same invention as method and system claims (extension of *Vicom*)
 - remains general EPO practice
 - US allowed medium claims (*Beauregard*)
 - *Nuijten* – no signal claims – medium must be “non-transitory”

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EPO Business Method Cases

- Business method cases led to new approach by BoA to excluded subject matter
 - Pension Benefits *T931/95*; *Comvik T0641/00*; *Hitachi T0258/03*
- Focus more on Article 56 (inventive step)
 - less on Article 52(2) EPC (technical “character”)
 - only consider **non-obvious** features that **contribute to technical solution** for inventive step – discard others (even if innovative)
 - but boundaries of patentability fairly stable - see Microsoft decisions *T0411/03* etc for example of allowable computer technology
- Contrast US situation – *State Street decision*

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EP Prosecution in practice

- Article 52(2) objections rare:
 - apparatus/system avoids the exclusions
 - but may be raised for neural network structure if seen as a mathematical model)
 - should be able to overcome objection with claim directed to a computer system or a computer-implemented method.
- Article 56 objections which rely on some claim features not having a technical character are more common
 - can be difficult to shift Examiner’s position (more so than for a normal prior art objection)
 - “requirements specification” to demarcate contribution of non-technical person from technical person - EPO Guidelines (G VII 5.4.1) – but is mathematics per se “technical”

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UK law – Court of Appeal

- *Merrill Lynch* – 1988
 - case rejected as business method
 - rejected “Falconer approach”
 - accepted EPO approach in *Vicom*
- *Gale’s Application* - 1990
 - device for calculating square roots
 - claimed as ROM
 - rejected as computer program (not as mathematical method - probably)
- In late-1990s UK became less hospitable than EPO to software technology inventions
 - including focus on individual exclusions



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Macrossan/Aerotel 2006

- Court of Appeal
 - allowed Aerotel/rejected Macrossan
 - held bound by *Merrill Lynch* (and *Vicom*?)
 - 4-step test proposed by UK IPO
 - properly construe the claim
 - identify the actual contribution
 - ask whether it falls solely within the excluded subject matter
 - check whether the actual or alleged contribution is actually technical in nature
 - accepted by court, although need for final step is bit unclear), and definition of contribution can be difficult

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Aerotel and EPO

- Rejected approach of recent EPO cases
 - excluded subject matter still applied directly
 - suggested questions for EBA
- EPO President rejected questions
 - *T154/04* (Duns Licensing) - strong affirmation of existing EPO approach

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EBA Referral – *G03/08*

- Subsequent (UK) President of EPO
 - did pose 4 questions to EBA
 - focussed on Article 52(2) and 52(3) EPC, despite current EPO practice being based substantially on Article 56 EPC
- Many submissions received from interested parties
 - Open Source community against software patents
- Referral held to be inadmissible (development rather than divergence of case law)
 - in effect, confirmed existing EPO approach

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Symbian & Astron Clinica

- *Symbian* - invention relates to managing DLLs on a mobile telephone (or similar device)
 - corresponding EPO case allowed
 - Court of Appeal confirmed patentability
 - considered to be a better computer
 - impact probably not as great as expected
- *Astron Clinica* - appeal upheld by Kitchin J (High Court)
 - computer claims are allowable if method and system claims allowable to provide patentee with proper protection

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AT&T KNOWLEDGE VENTURES LP (2009)

- High Court: 5 “signposts”:
 - whether the claimed technical effect has a technical effect on a process which is carried on outside the computer;
 - whether the claimed technical effect operates at the level of the architecture of the computer; that is to say whether the effect is produced irrespective of the data being processed or the applications being run;
 - whether the claimed technical effect results in the computer being made to operate in a new way;
 - whether there is an increase in the speed or reliability of the computer;
 - whether the perceived problem is overcome by the claimed invention as opposed to merely being circumvented.
- Frequently utilised by IPO
- (4th signpost has been updated, *HTC v Apple*)

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Halliburton 2011 – High Court

- Method of designing a drill bit
- Held to be:
 - not a computer program as such (technical)
 - not a mental act as such
 - exclusion only covers narrow interpretation
 - not **machine-implemented**
- UK consistent with *EPO T1227/05* (Infineon)
 - (but see below *G01/19*)

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Different Legal Approaches - US

- US s101
 - inclusive rather than exclusive
 - US Supreme Court became more favourable through 1980s and 1990s



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US Case Law

- *State Street Bank (1998)* – CAFC
 - no “method of doing business exclusion”
 - led to widespread patenting of business methods
- *Bilski (2010)*
 - financial hedging (computer-implemented)
 - held unpatentable by CAFC en banc and by US Supreme Court
 - Supreme Court relied upon rejection as “abstract”
 - Supreme Court came close (4-5) to rejecting all business method patents – but *State Street bank* has really gone anyway

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Myriad and Alice

- *CLS Bank v Alice Corp* – managing financial obligations
 - District Court invalidated (after *Bilski*)
 - CAFC initially overturned
 - CAFC en banc upheld District Court refusal
 - – but couldn’t agree on approach
 - 10 judges – 7 opinions!
- Supreme Court (2014) – unanimously invalidated
 - see also *Myriad (2013)* – gene patenting

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Three Excluded Areas under s101

- Laws of Nature
- Natural Phenomena
- Abstract Ideas
- “we have interpreted S101 and its predecessors in the light of this exception for more than 150 years”
– see e.g. *O’Reilly v Morse 1854*
- “we have described the concern that drives this exclusionary principle as one of pre-emption”

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Pre-emption

- *Bilski*: upholding the patent “would pre-empt use of this approach in all fields and would effectively grant a monopoly over an abstract idea”
- “At the same time, we tread carefully in construing this exclusionary principle lest it swallow all of patent law”
- “An invention is not rendered ineligible for patent simply because it involves an abstract concept”

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Two-stage test

- “We must distinguish between patents that claim the ‘building blocks’ of human ingenuity and those that integrate the building blocks into something more”
- (1) are the claims directed to one of the patent-ineligible concepts
- (2) if so, what else is in the claims
 - a standard or generic computer implementation is not enough

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ALICE - Additional comments

- Did not define in detail what is patent ineligible
 - was close enough to *Bilski* to have same outcome
- No differentiation between claim categories (system, method, etc)
 - even if nominally within statutory subject matter
- This had a significant impact in the US and led to some discussions about potential legislative change

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The Free Software Foundation

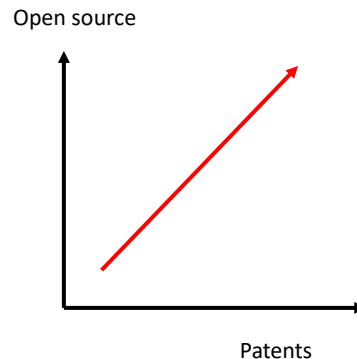
- “Any free program is threatened constantly by software patents”
 - GPL v2.0
- “Every software patent is harmful, and every software patent unjustly restricts how you use your computer”
 - Richard Stallman
(<http://www.gnu.org/philosophy/fighting-software-patents.html>)
- “Open Source” licenses – very wide range of documents and degree of restriction



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Another Perspective

- Qualitative graph
 - no sign of a negative correlation on a spatial or temporal basis
- It is no longer a clear divide – many large companies, e.g. Google, utilise both open source and patents
- Be aware, some OS licenses may impact patent strategy



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FRAND and SEPs

- Some computer-related areas have significant standardisation – e.g. telecoms
 - widespread patenting
 - SEP – standard essential patents
- FRAND – fair, reasonable and non-discriminatory licensing
- Significant litigation
 - e.g. *Unwired Planet v. Huawei* [2017] EWHC 711
- Heavy involvement of EU Commission; UK has also reviewed.
- *IP Com v Vodafone* – UK Court of Appeal 2021 – example of SEP for 4G telecoms

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EPO EBA referral – G1/19

- *T1227/05* had allowed claims to a simulation of semiconductor technology
 - dropped requirement of earlier case-law for manufacturing step in claim
 - need for technical purpose
 - appeared generally accepted - Guidelines G II 3.3.2
- *T0489/14* called this into question
 - simulating pedestrian movement in building
 - referral to EBA because of divergence from *T1227/05*
 - restricted definition of technical effect

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G1/19 – decision

- Confirmation of general approach of Comvik
 - non-technical features that do not contribute to technical effect are not relevant for inventive step
- Middle way between *T1227/05* and *T0489/14*
 - Technical purpose should be handled as part of Comvik analysis
 - Refused to define limitations of technical
 - Claim should reflect scope of technical effect (which may be interpreted more restrictively)

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Artificial Intelligence (AI)

- Various consultations, e.g. from EPO, WIPO and USPTO on potential issues including:
- inventorship - can an AI machine be an inventor?
 - NO - *Dabus* case refused by UK Supreme Court
- inventive step - a priori, is it always obvious to use an AI system?
- sufficiency – who knows the inner workings of how a trained AI system works
- support – how do you extrapolate from one example of a trained AI system?

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Miscellaneous AI cases

- *T161/18* – AI system to determine cardiac output, held insufficient (in German)
- *Reaux-Savonte v IPO* – UK High Court 2021
 - data array structure for use with AI system
 - IPO refused to search – did not follow any of the signposts (rejection upheld on appeal)

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Emotional Perception

- Music recommendation based on:
 - (i) physical parameters – dynamic range, beats per minute, harmonic v non-harmonic
 - (ii) emotional perception – human experience
- Trained on (i) and (ii) to create system that uses both (i) and (ii) for recommendation
- Main issues:
 - (i) is setting weights a computer program
 - (ii) is recommendation based on human experience a technical outcome (or aesthetic)
- Refused by Hearing Office, overturned by Patents Court
- Hearing at Court of Appeal – May 2024 (on You-Tube!)
 - upholding Patents Court might be significant

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Conclusions

- EP law seems fairly settled
 - *G1/19* may slightly narrow patentability
 - AI may lead to some new pressure
- UK - some regard as still more difficult than Europe for “software technology” but general approach seems more conciliatory, and *Emotional Perception* could leapfrog EPO
- US – post-*Alice* – more difficult and unpredictable than before *Alice*

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The End !



Thank you for your attention!

- [Simon Davies srd@altairip.co.uk](mailto:srd@altairip.co.uk)
- (most images from Wikipedia)

For more information please contact:

The Chartered Institute of Patent Attorneys
2nd Floor, Halton House, 20-23 Holborn, London EC1N 2JD
Telephone: +44 (0) 20 7405 9450
Email: info@cipa.org.uk
www.cipa.org.uk