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On the Economics of CII

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Outline

- CII versus software patents: beyond the semantics
- Is patenting software different?
- The economics of follow-on invention
- Competition and European software patents
- Conclusions

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CII vs software patents

- Interpretation of inventions (Art.52(1) EPC):
  - "invention" implies a requirement of technical character
  - Otherwise invention excluded from patentability
- Technical character present when:
  - A technical effect is achieved
  - A technical problem is solved
  - Technical features are defined
  - Implementation requires technical considerations
- Is it possible to get a patent for a computer programme?
  - Yes, if there is a "further technical effect"
- Is it possible to get a patent for a business method
  - No (Auction Method/Hitachi T258/03)
- Is it possible to get a patent for a business method defined as a computer program
  - Yes, to be examined as a CII

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CII and software patents

- Patenting CII and software ultimately similar:
  - While US law does not require a technical contribution, neither does EU law in practice (case law of the Boards of Appeal)
  - Business schemes using Internet, games, sports, coding systems, entertainment methods and devices or schemes for presenting information all eligible for patent
- US-EU difference resides in assessment of novelty or patent quality or patent height (art 54 EPC)
  - Various estimates (ISI-FhG, Euro-Linux, etc.) point to relatively large numbers of software patent applications in EU.
  - Procedures and examination quality are significantly better in case of software: 90% of business method applications rejected.
  - Search reports for EPO software patents contain more references (1.41) to non-patent literature than reports for other patents (0.94).
  - However, the opposition rate is significantly lower for SW patents than for other patents (by a factor of 2 to 3).

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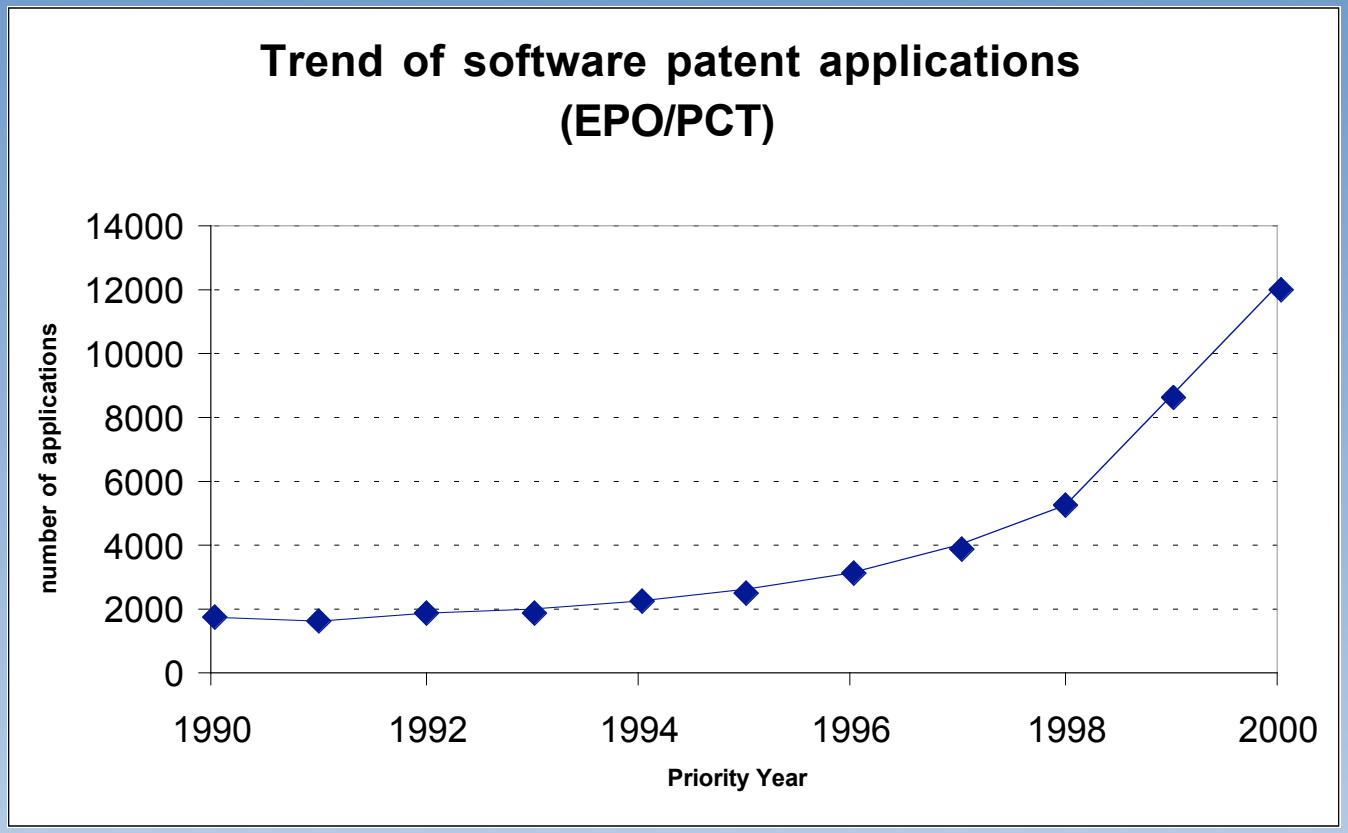
Software patents in Europe



Source: Schmoch (2003, p. 9) - redrawn

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On software IPR

- Some general comments Dietmar Harhoff (Uni Munich):
  - For most inventions (and in particular general purpose computing), copyright protection creates a much better overall balance between innovation and competition than patent protection.
  - For **some** inventions (mostly in embedded software), patents will be superior to copyright and provide important R&D incentives.
- Basic question policy question is: how to separate these two types of inventions (if at all possible).
- If there is no reasonably clear separation, a system without any software patents appears to be superior.
- The question has up to day not been resolved. It is today the Boards of Appeal case law which is ultimately deciding on the issue by interpreting technical character, further technical effect and other aspects.

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The two faces of software

- Embedded software
  - Trend towards keeping technical functions (included before in dedicated hardware) now separate. Desire for such software based patents for industrial engineering
  - Mainly large MNCs with large R&D laboratories
  - striving to obtain large volume of patents
  - Use of patent portfolio as strategic tool for R&D alliances and partnerships
  - Standardisation based on patents (GSM, UMTS)
- Software industry:
  - sequential and cumulative process of software development
  - research based on low capital requirements
  - rapid improvement cycles and fast imitation
  - frequent reuse of code
  - large role of SMEs (in particular in Europe)
  - crucial role of non-patented interoperability standards (TCP, HTTP, SMTP, XML, SAOP, SQL)

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Why Software *is* different

- Common problems with software patents
  - denying follow-on inventors access to first-round inventions, in particular standards
  - increasing entry barriers, e.g. by creating patent thickets
  - increasing legal uncertainty and search costs (in comparison to copyright)
  - increasing social costs due to questionable patents (difficulty in finding prior art): a patent may describe a technique that computer scientists consider to be trivial
- Quid about the interaction between Copyright and Patents
  - Copyright protection limits disclosure, patents are supposed to promote disclosure. How do they operate in conjunction?
  - The reality: empirical studies show that patents do very little to promote disclosure in this field. Copyright on the other hand largely prohibits reverse-engineering. No positive disclosure effect as a result

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Follow-on inventions

- New problem of follow-on inventions. Economists only started to explore the implications of sequential invention processes in the 1990s.
- Basic idea: the overall innovation performance of an economic system is determined by sequential invention steps.
- Giving the first round of inventions strong protection discourages follow-on inventors.
- The overall performance of the system can become weaker as first-round protection gets stronger. Stronger patents do not automatically mean stronger incentives for innovation.
- Many economists agree that sequential invention processes are particularly pronounced in software and biotechnology. Empirical studies confirm that view for software (see Blind et al. 2002/2003).

The German Monopoly Commission Report on patents (2002)*

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- "(...) From an economics perspective, the justification of patent protection lies in setting efficient incentives for investments in research and development ..."
- "(...) Empirical studies on the conduct of small and medium-sized firms in the software sector have shown that patents belong to the least efficient instruments for protecting investments."
- "(...) The increasing market power associated with patenting is likely to lead to further increases in market concentration for software products and to impediments for competition."

* Translation by Dietmar Harhoff

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Summary and conclusions

- Difficulty to separate two faces of software linked to legal interpretation of technical application/effect
- Implications and link towards patent height and granting of trivial patents : further or new technical effect implies often priority to industrial applicability over true inventiveness
- EPO practice has received strong impulse for patent quality
- Patents for software may have some benign effects, e.g. by supporting the creation of markets and facilitating VC financing of start-ups. But there are major problems as well.
- The overall balance of benefits and costs is by no means clear. There is at this stage no economics study available to shed more light on this.
- Interesting attempts at UK patent office through various simulations of cases
- The current situation in Europe has real option value – maybe we should use that value and assess the alternatives first and act then.