

# Through the Lens of Intangibles

What Patents on Software and Services  
Reveal about the System

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## *intangibles problem*

- in accounting
  - book value accounts for diminishing fraction (approx. 1/3) of market value
- in economic policy
  - we know less and less about what's most important

## *patents: general developments*

- expansion of patentable subject matter
- erosion of limitations and standards
  - subject matter
  - utility
  - nonobviousness/inventive step (Lunney)
    - from "flash of genius" (pre-1952) to "novelty plus"
    - keyed to ordinary skill (i.e., mediocrity) in a knowledge-based economy
- strengthening of patents
- niche entry, markets for technology, and strategic portfolio building
- stronger, easier-to-get patents increase demand and use
- globalizing economy
- greater prominence, greater stakes

## *patents in information technology*

(Hall-Ziedonis on semiconductors; FTC/DOJ hearings)

- strategic portfolio building
- cross-licensing with side payments
- complex products vulnerable to hold-up
  - loose patents and “trolls”
- niche entry encouraged, product market entry encumbered
- “stick licensing” (cf “carrot licensing”)
- failure of disclosure function

## *information failure in the ICT sector*

[T]here are too many patents to be able to even locate which ones are problematic. I used to say only IBM does clearance ... but IBM tells me even they don't do clearance searches anymore.

**Robert Barr**, Vice President, Worldwide Patent Counsel, Cisco Systems, Inc., FTC Roundtable, October 2002

## *failure of disclosure function in ICT*

- too many patents, too much information
- risk of willful infringement inhibits knowledge
  - provisional rights have similar effect because of actual knowledge requirement
- low quality
  - validity often at issue
  - difficult and costly to evaluate
- opportunity cost
  - reliance on tacit knowledge
- little enablement in software or service patents beyond the claims

### *patents on software and services*

- drive perception of “quality” problem
  - business method initiative
  - >> 21<sup>st</sup> Century Strategic Plan
  - not just a “new technology” problem
- broad user liability and exposure
- research lag
- widespread discontent/politicization

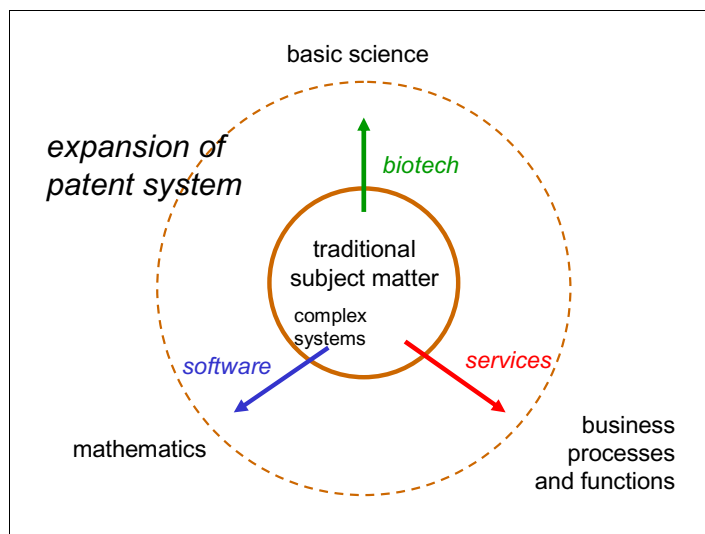
### *enduring hostility toward software patents*

I speak with my fellow in-house counsel in the software industry frequently. There is an amazing degree of unanimity about software patents. We all hate them.

**Martin Konopken, Autodesk**, National Academy of Sciences, Feb. 2000

As I'm sure this committee is aware, there is a general animosity to pure software patents within and outside of the industry....

**Bradford Friedman, Cadence Design**, FTC/DOJ hearings, Feb. 2002

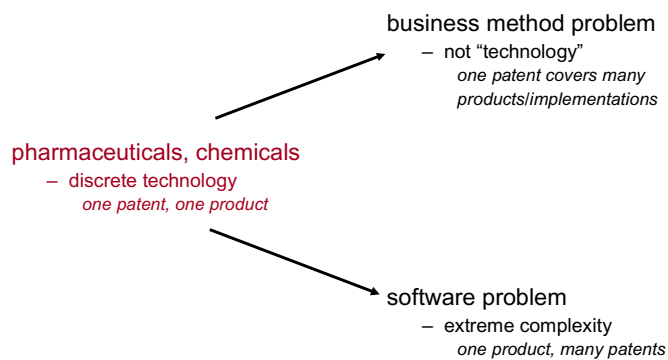


*pharmaceuticals: the strong case for patents*

- discrete technology
  - one patent, one product
- manageable transaction costs:
  - low cost of patent prosecution relative to value of patented product
- large sunk costs and potential for free-riding:
  - very high costs of development and commercialization, including clinical testing and regulatory approval
  - cheap reproduction + no copyright protection
- practice fits policy expectations:
  - valued
  - needed
  - accepted by consensus
  - contribute to flow of knowledge

- pharmaceuticals, chemicals
  - discrete technology
  - one patent, one product*

*diverging characteristics*



### *business method problem*

“...[W]ith the advent of business method patenting it is possible to obtain exclusive rights over a general business model, which can include ALL solutions to a business problem, simply by articulating the problem.”

– IBM, *Comments on the International Effort to Harmonize the Substantive Requirements of Patent Laws* [USPTO consultation, May 2001]

### *turning to software....*

- extreme functional complexity of software products
  - function created by writing not manufacturing
  - thousands of functions in finished product
  - low barriers to entry innovation is distributed, diverse, prolific (“complementary”)
  - extreme range of granularity from code-level algorithms to features to business models/services
  - sequential innovation
- extreme knowledge management problems
  - invention is voluminous
  - independent invention is commonplace
  - diminished role of explicit knowledge (tacit embedded)
  - prior art unorganized, poorly documented
  - difficult to apply “inventive step”
  - rapid innovation and short product cycles
  - long prepatent history

### *why software is different (cont.)*

- network effects leverage protection and dominance
- extends liability to all sectors of economy
- high cost of integration, testing, debugging
  - enhanced vulnerability to patent attacks
- availability of copyright, trade secret, contract, technology + DMCA
- history of success without patents
- open source alternative
  - based on low overhead of copyright

*what functions should be nonproprietary?*

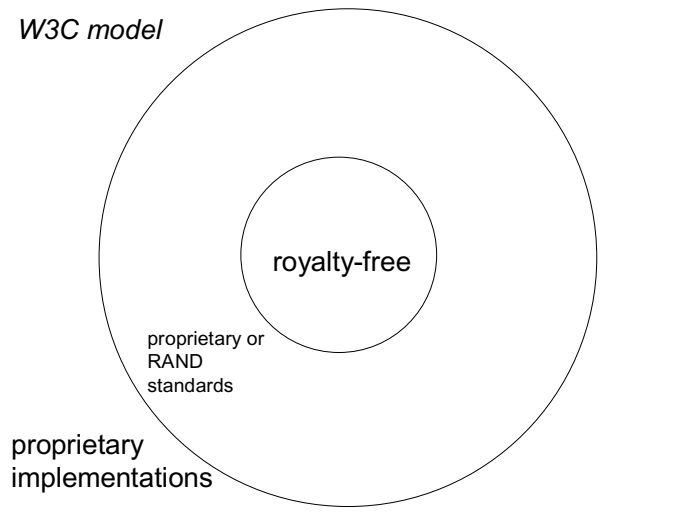
**legally defined**

- non-“technical”
- business methods
- algorithms
- abstract ideas
- basic science
- pure software (“computer programs as such”)

**market-defined**

- standards setting
- Internet and Web platforms
- royalty-free (RF) licensing for core Web standards
- open source software

*W3C model*



*arguments for non-proprietary core*

- enables open source distribution
- transaction cost avoidance
- congestion avoidance
- liability avoidance
- strong network externalities
- complementary innovation
- universal access

## *policy challenges*

- **balancing incentives**
  - broad versus narrow prospects
  - past investment vs. future opportunity
  - product market entry vs. niche entry vs. patent entry
- **reducing costs**
  - reduce transaction cost burden by raising inventive step
  - abolish unnecessary credentialing of intermediaries
  - consider administrative rather than adversarial system
- **certainty**
  - scale of inadvertent infringement
  - need to align patent practice and knowledge

### *legal costs/fees in patent litigation (through trial, no appeal) U.S. 2001*

amount in controversy	costs per side	X 2 = total for both sides	total costs as % of amount in controversy	plus
< \$1M	\$0.5M ((\$0.4M in 1999))	\$1M	<b>&gt;100%</b>	<b>staff time, opportunity costs</b>
\$1M to \$25M	\$1.5M	\$3M	...	
>\$25 M	\$3M	\$6M	<b>&lt;24%</b>	

AIPLA, Report of Economic Survey 2001

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## *policy challenges*

- transparency and accountability
  - opacity gives undue strength to intermediaries, diminishes policy oversight
  - one-size-fits-all leads to unarticulated differences
    - in judicial application (Lemley and Burk)
    - in practice (e.g. cross-licensing, stick licensing)
  - lack of information about business practices
  - lack of incentives for invalidating patents
    - early publication has not worked in U.S.
    - public bounty system? (Thomas)
  - understand differences in technology and innovation environments, including nonproprietary forms of innovation
  - ideology

## *divergent missions*

**US Patent and Trademark Office** mission of patents business: “to help customers get patents”

**European Patent Office** mission: “to support innovation, competitiveness and economic growth for the benefit of the citizens of Europe”

**WIPO**: change from “trade association” mission (1996 Plan) to broader vision (1999 Plan)

“We just keep replicating the old results based on the old precedents, whether they have kept pace with changes in business, changes in technology, or changes of a different sort.... I cannot remember the last time when any meaningful economic or empirical, quantified data was cited in a brief.”

Judge Paul Michel, CAFC, Berkeley  
conference on patent reform, March 2002

## TRIPs: one-size-fits-all?

“...[P]atents shall be available and patent rights enjoyable  
without discrimination as to  
the place of invention,  
the field of technology and  
whether products are imported or locally produced.”

### *things to think about*

- heterogeneity of business models
  - software
  - services
  - patents facilitate heterogeneity
- changing conditions and practice
  - co-opetition vs. opportunism
- “licenses” – exclusive, cross, implicit, stick...
- professional perspective
- international perspective