

Lecture 10

The Sharing and Exchange of Patents

E5104 – Economics of Innovation

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Introduction

- Independent companies routinely share and exchange patents
- Different mechanisms:
 1. (Cross-)licensing agreements
 2. Patent pools
 3. Patent pledges/commons
 4. Shared ownership
 5. Acquisition
- Transactions are about the use and ownership of patented technology

Introduction

- Sharing between upstream/downstream firms enables specialization
- But why do competitors share patents?
 - Technological motives
 - Strategic motives
- **Benefits:** promote diffusion of innovation and increase returns to innovation by creating markets → increases incentives for knowledge creation
- But potential for anti-competitive conduct

(Cross-)licensing

- **Licensing:** owner of a patent retains ownership but grants another party right to use patented technology (in exchange for a licensing fee)
- Licensor voluntarily relinquishes exclusivity by granting a license
- By far most common way to exchange patented technology (survey evidence: a third of patenting companies engage in licensing, often large fraction of patent portfolio, Zuniga and Guellec, 2009)
- **Cross-licensing:** parties grant each other a license for the use of their patents
- Advantage of cross-licensing: recognizes mutual licensing needs and facilitates transactions by reducing need for explicit patent valuation and exchange of monetary payments

Why Do Companies License? – Technological Motives

- Vertical specialization in innovation – source technology externally
- Innovator cannot exploit innovation (e.g., lacks necessary complementary assets, innovation useful in markets in which innovator does not operate – often related to geographical scope)
- Increase application of the technology across different industries and geographical areas
- Joint development of technologies (avoid duplication)
- Increase adoption and diffusion of technology
- Inter-operability standards (patents essential for a given standard held by different firms)

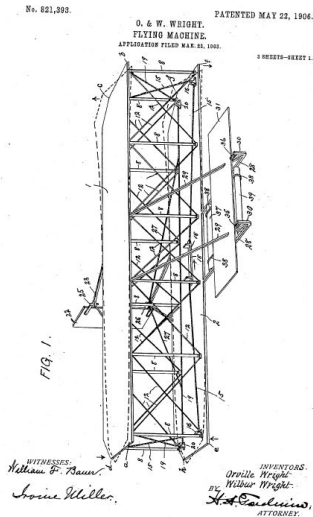
Why Do Companies License? – Strategic Motives

- Deter entry (license to inefficient entrant to foreclose entry by more efficient firm)
- Deter innovation by offering license to technology (license less costly than investment in R&D)
- License to enhance demand (second sourcing – protect buyers against having to deal with monopolist supplier)
- Create and control de facto standards
- Solve patent disputes (litigation)

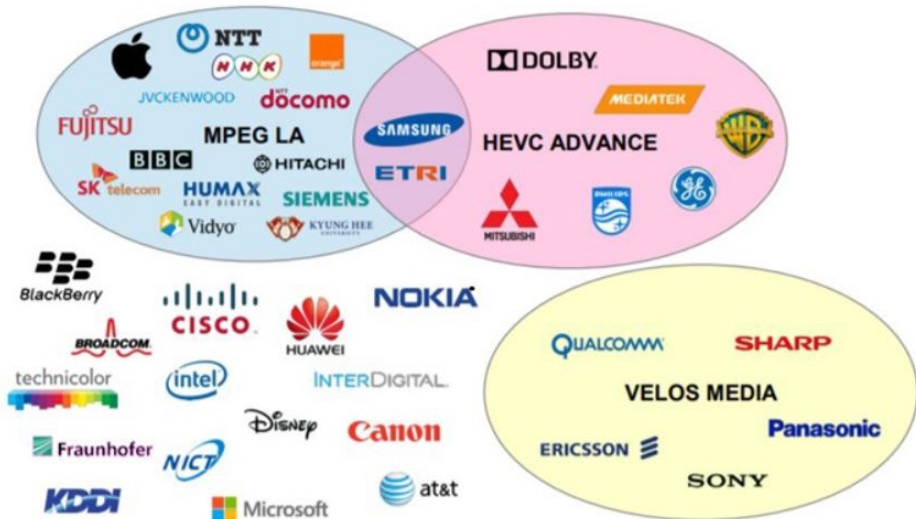
What Determines Licensing Decisions? (Arora and Fosfuri, 2003)

- Assume interaction between market for technology (sell technology) and product market (sell output)
- **Licensing has 2 effects:**
 - **Revenue effect** > **rent dissipation effect**
 - **Revenue effect:** rents earned by the licensor in the form of licensing payments
 - **Rent dissipation effect:** erosion of profits due to another firm (the licensee) competing in the product market
- With ≥ 2 technology holders, licensing creates negative externality upon other innovators in the product market, ignored by licensor
- ▷ Privately profitable to license but joint profits higher in absence of licensing
- ▷ *Implication:* licensing increases the more homogenous the products sold by competing licensors (licensor externalizes more of the cost of an additional competitor to the other licensor).

Patent Pools



Patent Pools: High Efficiency Video Coding (HVEC)



Patent Pools

- **Definition:** voluntary informal or formal organizations where ≥ 2 entities license bundle of patents to each other – and potentially outsiders
 - Often patents made available individually not only as package
 - Organized and administered by private organizations
- Popular mechanism (due to increased importance of technology standards and fragmented ownership of standard essential patents)
- Examples:
 - *Tech standards:* MPEG, DVD, Bluetooth
 - *Pharma:* Medicines patent pool (MPP), Pool for Open Innovation Against Neglected Tropical Diseases (NTD Pool), WHO COVID-19 Technology Access Pool

Patent Pools

- **Benefits:**
 - Enable access to inventions protected by patent rights owned by multiple parties
 - Reduce transaction costs (need a single license from pool), especially when ownership is fragmented (“Tragedy of the Anti-commons”)
 - Avoids “royalty-stacking” through coordination
 - Reduce asymmetric information about patents
 - Pro-competitive
- But pools can be anticompetitive and stifle innovation

Patent Pools – Factors

- Who participates
- Which patents enter the pool
- Price setting and revenue sharing rules
- Patents substitutes or complements
- Licensing rates for pool insiders vs. outsiders
- Restrictions on licensing
- Grantback and adjustment clauses

Some Empirical Insights (Layne-Farrar and Lerner, 2011)

- Data on 9 modern SEP pools (1394, 3GPP, AVC, Bluetooth, DVB-T, DVD-1, DVD-2, MPEG-2, MPEG-4)
- Findings:
 1. Vertically integrated firms more likely to join patent pool
 - Lower aggregate licensing fees
 - Lower transaction costs
 - Potentially lower rent dissipation effect within pool
 2. Numeric proportional sharing rules attract fewer members
 - Does not take into consideration value of contribution
 3. Symmetry of contribution important for decision to join and sharing rule

Patent Pledges



All Our Patent Are Belong To You

Elon Musk, CEO • June 12, 2014

Yesterday, there was a wall of Tesla patents in the lobby of our Palo Alto headquarters. That is no longer the case. They have been removed, in the spirit of the open source movement, for the advancement of electric vehicle technology.

Tesla Motors was created to accelerate the advent of sustainable transport. If we clear a path to the creation of compelling electric vehicles, but then lay intellectual property landmines behind us to inhibit others, we are acting in a manner contrary to that goal. Tesla will not initiate patent lawsuits against anyone who, in good faith, wants to use our technology.

When I started out with my first company, Zip2, I thought patents were a good thing and worked hard to obtain them. And maybe they were good long ago, but too often these days they serve merely to stifle progress, entrench the positions of giant corporations and

Patent Pledges



Royalty-Free Patent Licensing

News room > News releases >

IBM Pledges Free Access to Patents Involved in Implementing 150+ Software Standards

MONSANTO

Innovations

Products

Comp

Stories | April 5, 2017 | ⌚ Read Time: 2 minutes

Monsanto's Commitment:
Farmers and Patents



redhat.

Technologies

POLICIES AND GUIDELINES

Patent promise

Patent Pledge

- **Definition:** public, irrevocable commitment not to enforce patents against anyone that meets certain conditions
 - Not a donation, and not tax deductible
 - Ownership remains with firm
 - Not necessarily for joint use
 - Potential “licensees” don’t necessarily have to notify owner of use
- Characteristics:
 - Open vs. restricted patent pledges
 - Specific patents vs blanket declarations
 - Revocable, transferable?
- Lots of patent pledges: Tesla, IBM, Sun, Red Hat, Google, etc.

Patent Pledge

- Why not let patent simply lapse?
- Tesla: “pledge is not a waiver of any patent claims (including claims for damages for past acts of infringement) and is not a license, covenant not to sue, or authorization to engage in patented activities or a limitation on remedies, damages or claims.”
- **Defensive safeguards:** pledge imposes conditions on anyone who benefit from pledge
 - Tesla: refrain from assertion of any type of IP against Tesla or against a third party for its use of technologies relating to electric vehicles or related equipment & refrain from challenging the validity of any of Tesla's patents.
 - Conditions can substantially limit a company's (strategic) use of its own patent portfolio

Patent Pledge

- ▶ Why do private companies incur the cost associated with a pledge?
 - Possible motivations:
 - Conditions imposed on users
 - Promote technology diffusion/technology standard (product interoperability)
 - Promote follow-on innovation
 - Promote sale of complements
 - Patents not central to company's business
 - Broader corporate social responsibility goals
 - Patent holder benefits more from promoting use of patented technology by setting price of a license at zero than from maximizing licensing revenue

Patent Commons

- **Patent commons:** combination of patent pledges from different entities
- Different from cross-licensing/pools:
 - Patent commons are open to third parties
 - No formal contract needed to benefit from pledge (often users do not even have to notify patent owner of their use)
 - No payment required

Eco-Patent Commons (Contreras et al., 2019)

- Example: Eco-Patent Commons
 - Created January 2008 by IBM at World Business Council For Sustainable Development (WBCSD) – discontinued in 2016
 - First green patent commons
 - Available to third parties for climate-change related activities with auto royalty-free license
 - **Impact:** no increase in diffusion or follow-on innovation
- Why did it fail?
 - Patented technologies not particularly important
 - Supply driven without much concern for demand
 - No tracking of usage/lack of incentives
 - No technology transfer
 - Lack of institutional support
 - Misunderstanding of patent systems globally
- Other more successful patent common: Patent Commons Project by Linux Foundation, Open Covid Pledge...

Joint Ownership

(19) **United States**

(12) **Patent Application Publication**
Chatty et al.

(10) **Pub. No.: US 2010/0006944 A1**

(43) **Pub. Date: Jan. 14, 2010**

(54) **MIXED VOLTAGE TOLERANT
INPUT/OUTPUT ELECTROSTATIC
DISCHARGE DEVICES**

(21) Appl. No.: **12/168,936**

(22) Filed: **Jul. 8, 2008**

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(57) **ABSTRACT**

An input/output (I/O) mixed-voltage drive circuit and electrostatic discharge protection device for coupling to an I/O pad. The device includes an NFET device having a gate, a drain, a source and body, the gate adapted for coupling to a pre-drive circuit, the source and the body being coupled to one another and to ground. The device also includes a bipolar junction transistor having a collector, an emitter and a base, the emitter being coupled to the drain of the NFET and the collector being coupled to the I/O pad.

Joint Ownership

- Firms may benefit from research collaboration
- But what happens with the output of joint R&D?
 - How to appropriate returns
 - How to distribute returns
- Need to decide before outcome of joint research known
- Affects willingness to engage in research collaboration
- Affects effort provision and knowledge exchange necessary for successful research outcome
- Joint ownership can enable research collaboration

Joint Ownership

- Co-ownership affects appropriation
- Co-owners have equal rights to the use of jointly owned patent regardless of individual contribution to invention
- Legal rules differ across countries:
 - U.S.: each co-owner can license freely – no consent of co-assignees needed
 - Europe: co-owners require consent to license
- Degree to which co-ownership affects appropriation depends on product market relationship between co-owners
- If co-owners product market competitors: duopoly instead of monopoly
- Affects incentives to license (over- or under-licensing)
- Joint ownership can also serve strategic purposes

Conclusions

- Many different reasons to share and exchange patents
- Different modes of sharing IP
 - Cross-licensing
 - Pools
 - Pledges/commons
 - Joint ownership
 - Acquisition
- Striking exemption of collaboration between product market competitors from anti-trust scrutiny