Leverage Your Brain Power
Let Innovations to Support Innovations

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About SNR Denton

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Our Locations
The World We Are In

- Role of IP
  - Commercial world:
    - No IP, No market unless pay
    - Examples:
      - Apple v. Samsung
      - TransPerfect v. MotionPoint
  - Research institutions:
    - Funding is more tight
    - Leveraging IP is on the rise
    - IP has become a means to better support further research activities
    - Examples: UC, Boston University, CMU, MIT, Stanford, etc.
The World We Are In

- Real World Cases involving research institutions enforcing their patents
  - Successful enforcement
    - Regents of the University of Minnesota v. Glaxo Wellcome, Inc. (over $300 million settlement)
    - University of California v. Genentech, (over $200 million settlement)
    - Globespan Virata v. Texas Instruments ($112 million settlement)
    - University of Pittsburgh v. Varian Medical Systems, Inc. ($74 million settlement)
  - Failed enforcement
    - CMU v. Schwartz (patent was invalidated)
    - NYU v. Centocor ($1.67 billion judgment overturned on appeal for patent’s failure of written description requirement)
Unique Features in Developing IP at University

- Characteristics of university setting
  - Encompass more diversified disciplines
  - There are many more active thinkers (faculty, research staff, graduate students)
  - New ideas/improvements emerge everyday in all directions
  - Each research group is relatively autonomous
  - High volume of new submissions of publications
  - Graduate students come and go
  - Unrestricted communications with outside world on ideas
  - Software code: constant changes
  - Assignment (Stanford case)
What Is Involved?

- **Substantive Effort**
  - Identify good problems (key - academic v. industry): not easy
  - Solve problems that bother many: fully
  - Spot promising future direction (next hot thing): enable it
  - Develop solutions that are hard to get around
  - Enrich each idea by exploring alternative implementations to wrap around

- **Procedural Effort**
  - Timing is crucial
  - Select ideas that have greater commercial potential (funding is always limited)
  - Determine appropriate form of protection (copyright or patent?)
  - Coordinate effort from multiple parties to secure protection (faculty, students, university, and attorneys)
  - Seek licensing opportunities (monitor, strategize, and monetize)
What It Takes to Develop Useful IP?

- **Coordination Between Substantive & Procedural Efforts**
  - Timeline is well communicated
  - Coordination between publication & IP protection activities
  - Joint effort on getting IP that has better commercial potential
    - **Substantively:** (1) carefully determine topics, (2) conduct focused and organized research activities, (3) ensure timely submission for protection before publication, (4) ensure continuity in assisting the prosecution
    - **Procedurally:** (1) work with inventors on timeline, (2) follow up on the progression, especially on invention development, (3) be aware of publication submission dates, and (4) ensure IP protection prior to publication
  - Joint effort in identifying monetizing opportunities
Types of IP Protection?

- **Patents**
  - Directed to protect
    - Process, machine, manufacture, or composition of matter, or any new and useful improvement thereof (35 U.S.C. §101)
  - Threshold: Useful, novel, *non-obvious*

- **Copyrights**
  - Directed to protect *expression* rather than the idea behind the expression

- **Trademarks**: distinctive sign/indicator to identify the source of product/service

- **Trade Secrets**: Commercial information giving a business competitive advantage

Focus of this talk will be on patents & copyrights.
What is Patentable?

- Two Types of Patents
  - Predictable Art (CS, EE): experimentation may NOT be necessary to file a patent application to protect an idea (constructive reduction to practice is needed though)
  - Unpredictable Art (chemistry): experimentation is necessary and experimental result is crucial in supporting the innovation to be patented

- What ideas can be patented?
  - Does not have to be revolutionary (Bell’s phone)
  - Improvement can be quite valuable (e.g., coating a trench before depositing conductive material in the prior art process of making memory cells)
  - Combination of existing technology in a novel manner also patentable
    - Combine PDA with mobile phone into one
    - Combine existing Internet technology for website translation
When to Seek Patent Protection

- **Timing**
  - Crucially important in some fields (e.g., low entry barrier industry such as telecom, Internet, mobile)
  - Good ideas often emerge roughly at the same time
    - Example I: content rights management (3 months late)
    - Example II: Website translation (1 month difference with declaration)
  - More so for predictable art because many inventors rush to file patent applications as soon as they have the idea (no implementation)

- **How timing affects patentability**
  - First inventor, first file system
  - If anyone published the same idea, no novelty
  - If combination of prior technologies renders the idea obvious, not patentable
How Publications Impact Patent Rights?

- Patentability defeating events:
  - Prior Publications (even if your own – example)
    - Unrestricted public disclosure (talk, distribution of description, journal publication, book, thesis, conference presentation, peer review, etc.)
  - Prior Sale, offer for sale: unrestricted disclosure of functionality, blueprint, diagrams, etc. for sale (remedy: consider entering into non-disclosure agreement or NDA)

- Implications:
  - Publications surrender IP rights if no protection put in place
  - Publication can co-exist with IP protection if exercise timing management
  - Strategy: (1) filing for patent protection before making any unrestricted public disclosure or (2) put NDA in place when making disclosure
Obstacles In Timing Control In a University Setting

- High volume of publications and submissions
- Incremental improvement occurs everyday
- May lack of overall structured or controlled publication activities
- Hard to restrict idea exchanges with outside world (submission to peer review, discussion at academic gatherings, etc.)
- Often start with implementation of ideas and like to see experimental result before write down anything (lose time)
Useful Measures in Timing Control

- Streamline Consequential Events
  - Calendar publication activities with IP in mind
  - Get the draft down early enough without waiting till last minute
  - If predictable art, describe innovation first (in a manner that your peers would know how to practice) before implementing
  - Submit for consideration of filing patent application before implementation
  - Stage research activities to enhance timing control
    - Conduct brainstorm sessions on focused research issues
    - Submit the invention disclosure right after that for evaluation for patenting
    - Modify the invention disclosure during the evaluation period
    - Keep research notebook to have dates on each idea
Substantive Issues

- **Academic or Commercial?**
  - Threshold question to faculty in research
  - May lead to different ways to conduct the research

- **Ideas May be Assessed Differently**
  - What has higher academic value may not have much commercial value (a different modeling approach which is more expensive but may be more expressive unless there is a need for it in the commercial world)
  - What has commercial value may not have academic value (a little tweak to an existing approach may have great commercial value but hardly any academically)
  - Sometimes ideas have value in both (e.g., variable instruction length and re-configurable buffer size in multimedia processing)
Develop Ideas With Higher Commercial Value

- **Guided Invention Process**
  - Identify problems
    - Headache for the industry (bottleneck, e.g., e-commerce, video coding)
    - Natural yet unrealized capability given existing technologies (mobile device)
    - Next hot thing (computer capable of multimedia processing)
  - Develop effective solutions
    - Hard to get around (intuitive yet effective, otherwise solutions will be inferior on the balance)
    - Low entry barrier (easy to adopt, economical, no change to existing infrastructure/tool)
    - Full solution - explore alternatives to implement the solution
  - One limitation: research may be confined by the funding
Invention Process

- **How** (example)
  - Know what is out there
    - Devote sometime to learn what is in the industry (rather than publications)
    - Understand existing technologies and piece together (iPhone)
    - Play some products to know problems
  - Organized brain storm sessions
    - Identify directions (based on problems)
    - Head on with the problems
      - Send the topics to a group of people 1-2 days prior
      - No phone, no computer, no interruption for a number of hours
      - Moderating and fast moving
Prepare Patent Application

- **What Need to Be There?**
  - Specification: Written description, enablement, best mode
  - Claims: carve out the legal territory of the invention (unfamiliar form but crucial)
  - Drawings: not necessary but often present

- **Invention Disclosure**
  - As soon as possible (before implementation if possible)
  - Good academic publication may not be a good patent application
  - Design invention disclosure form or IDF with questions for facilitate evaluation
  - Paper form plus IDF can help attorneys towards a good patent application (academic papers may not meet those legal standards)
Prepare Patent Application

- Issues in patent drafting
  - Many research institutions submit papers as IDF (easiest)
  - Many attorneys simply re-format papers as patent application (also easiest but problematic)
  - Papers are often written in a manner not intended to teach person of ordinary skill in the art how to practice the invention.
  - Examples of failure on how a patent is written:
    - *NYU v. Centocor*, 1.67 billion judgment but overturned on appeal for failure of written description requirement) – huge loss due to how the application was written
    - Pfizer’s Viagra patent asserted worldwide – invalidated in England, China, and other countries for failure of enablement requirement
Claims

- Draft claims – Easy, Draft good claims – Not easy
  - Patent v. Will
    - Use long after drafting
    - When use, no longer can change anything
    - If find problems in use, it is too way late
    - Need to anticipate and avoid problems
  - Crucial to know where the technological boundary is
    - Claims craft the boundary between your territory and others’
    - Good understanding of technology helps to set the boundary correctly (better quality with lower cost)
  - Many drafting attorneys do not litigate patent cases
    - Not aware problems that can occur when a patent is used
What is a good claim - how big is your territory?

- Counter intuitive to most inventors: **Less is MORE** (where is my goodies?)
- **Wording** is crucial: (1) avoid ambiguous words (“remote”), (2) use more flexible words (“coupled with” rather than “linked to”)
- Capture the **essence** of the invention in the broadest form without more
  - If the key of the invention is A - Claim only enough to enable A
  - Technically competent attorney is crucial – know where is the boundary
- Claim both invention and application of the invention
  - Example, Qualcomm claims device that uses their technology
  - Lead to drastically enhanced commercial value
- Parallel claims (method, system, medium) to have all possible forms of implementation covered
Claims (Cont’d)

- Ensure Adequate Support in The Specification
  - Claim element by claim element – description found in the spec or drawing
  - Although initial claims self-supporting, not a good reliance (if avoidable, why fight?)
  - Real Life Case
    - *Panasonic v. Samsung*
    - Very costly to fix problem, if at all possible, during enforcement
- Follow the case law
  - Avoid disfavored claiming style (e.g., means plus function)
  - Avoid Internet jurisdiction issues (client/server, telecomm handshake algorithms)
  - Address joint infringer issues (vendor/customer, upstream/ downstream, software enabled induced infringement)
Protect An Inventive Method/Process

- Algorithm, Manufacturing Method, Automated Process
  - Manual Process (only protectable as a business method patent - difficult)
  - Computer implemented
    - Often as software or combined with hardware or manual operation
- What can be protected
  - The underlying algorithm or implementation (hardware or software)
  - A product from the novel process (product does not have to be new)
  - Copyright on the software, if applicable
Protect Inventive Method/Process (Cont’d)

- **Strategy**
  - Seek full protection: system, method, and medium
    - A method claim is directed to a computer implemented algorithm or process
    - A medium claim is directed to a medium (e.g., CD) that stores executable code of the software, which, upon being read by a machine (e.g., a computer or a mobile phone), will carry out the claimed method
      - Protect your invention against person who copies software and sells it via medium
    - A system claim is directed to the structure of a system (software or hardware) - many algorithms can be implemented via software or hardware modules
      - When involve multiple players (e.g., server and client)
        - Direct a claim to each party (direct infringement)
        - Have an overall claim covering the concert (induced infringement)
Is Copyright Protection Effective For Software?

- **Product Grade Software**
  - If a stabilized software product (e.g., WORD), it is appropriate to seek copyright protection
  - Goal is to prevent copying and distribution for commercial gain
  - Can also seek protection via medium claims
  - Advantage of copyright – 90 years after life

- **Research Oriented Software**
  - Often in a state of frequent modification - not cost effective because copyright is directed to specific “expressions” – limited protection to research oriented software
  - If University software subject to commercial use (e.g., a spin-off company distributes the software as a product), copyright protection may be appropriate
Scenarios I: Article or Apparatus Itself Is New

– Example: inventive apparatus is a new memory cell structure

What should be protected

– The new apparatus

– The process of creating the novel apparatus

– The application of the apparatus (e.g., memory array or even a device that has a memory with cells structured using the invention)

Goal:

– If a company (1) manufactures the apparatus, (2) uses the process to create the apparatus, or (3) apply the apparatus as claimed, a license is possible
Scenario II: Article/Apparatus Is Not New But the Process of Creating it is New
   – Example: a new or improved process of manufacturing a known memory cell structure (e.g., using a different wafer polishing technique so that it is more smooth)

What should be protected
   – The novel process
   – The apparatus created using the novel process
   – The application of the apparatus using the novel process (e.g., memory array or even a device that has a memory with cells structured using the invention)

Goal:
   – If a company (1) manufactures uses the process, (2) produce the apparatus using the process, or (3) apply the apparatus as claimed, a license is possible