Using Patents to Teach Engineers Innovation & Invention

David Orozco

Kellogg School of Management,
Northwestern University

Engineering Enterprise Through IPRs

May 17, 2007

Sanity Check

- Why Teach Patents to Engineers?

A Changing World

- The World *is* Flat!
- Engineering may be outsourced
  - Engineering Services Outsourcing (ESO) to India can attract some $50 billion

    National Association of Software and Service Companies, "Globalization of Engineering Services – The Next Frontier for India", Research Report (2006)

A New Vision

- The essence of strategy is difference you can preserve (M. Porter)
- This applies to engineering.

Goals

- A need exists to:
  - Differentiate &
  - Create Wealth

The Role of Patents

- Patents can be used to teach Examples of
  - Differentiated design (Dym et al., 2005)
  - Legal title to innovations with commercial significance (Conley & Orozco, 2007).

Prior Research

- Patents are undervalued tools to teach Design & Wealth Creation opportunities. (Garris, 2001)

Garris' Findings

- "Patent literature shows in detail the very best design."
- "Seeking alternative designs… is good design practice.. in the beginning of design."
- "There is a legal minefield."
- "keen understanding of the patent system [would allow engineering] to become a very lucrative profession"

Obstacles

- Patents are a legal concept
- Engineering faculty are not comfortable with patents
- How to bridge the abyss??

The Solution?

- Reading lots of patents
- Preferably those with rich histories
- Conferences like this!

Our Experience

- Innovation & Invention - IDEA 395

Our Experience

- We try to validate the findings expressed in Garris, 2001

A Vast Repository of Design

- Patents offer a large technical knowledge stock of Prior Art
  - This is our Text!
- Each patent offers a design challenge section relative to prior art, called "Background of the Invention".

Alternative Solutions

- Each patent specification offers alternative embodiments.
- These are reflected in the claims as well: e.g. method/product/system claims

Lawsuits (aka No Trespassing!)

- Most of the selected patents have been litigated and licensed
- The claims provide legal title.
- Knowledge of the legal ground rules of the patent system offers advantages: continuations (Black & Decker Snakelight) (Conley & Orozco, 2007)

Note: Semantic Differential

- A word on patent language, especially claims
- The semantic differential
- A good intro to relativism and its ties to design.
- Can be a fun and powerful learning tool.

Commercial Relevance

- Each selected patent offers a unique insight into commercial advantage
  - Lower manufacturing cost - better features - protected business method - early stage of technology & broad claims - standards.
- Patents teach the engineers what is patentable, how, and why they should exploit the intellectual property system to their advantage.

Summary

- There is a foundation for building the course as a subject around the world.
- We need more interdisciplinary collaboration and engineering "buy-in"
- We welcome your feedback

Albert Einstein

- "Within every great challenge lies opportunity."

Thank You!

- d-orozco@kellogg.northwestern.edu

References

- National Association of Software and Service Companies, "Globalization of Engineering Services – The Next Frontier for India", Research Report (2006)
- Clive L. Dym et al., "Engineering Design Thinking, Teaching, and Learning", Journal of Engineering Education, Vol. 94 No. 1 (2005)
- Charles A. Garris Jr., "The United States Patent System: An Essential Role in Engineering Design Education", Journal of Engineering Education, Vol. 239 (2001)
- James Conley and David Orozco, "Innovation and Invention – A Patent Guide for Inventors and Managers", Kellogg Case Series, Forthcoming Summer 2007