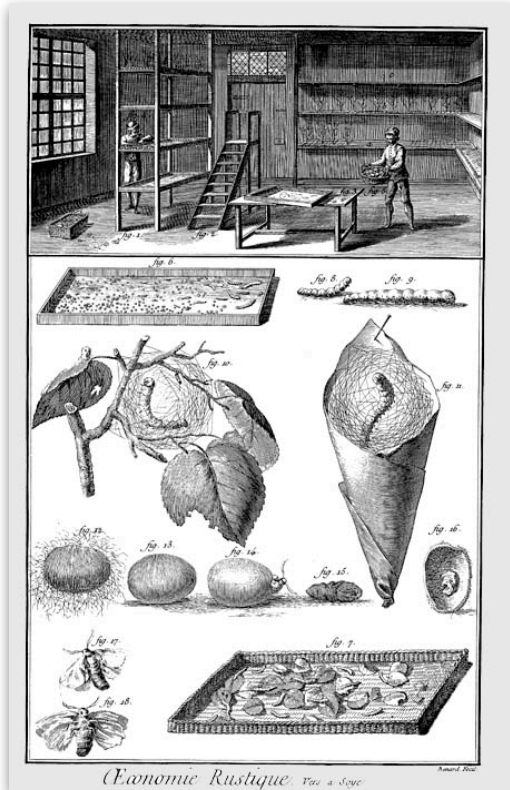


# Software Patents: The Good, The Bad, and The Ugly

17-313, Foundations of Software Engineering, Fall 2022

**Disclaimer: I'm not a lawyer!**

# Venice, 1474

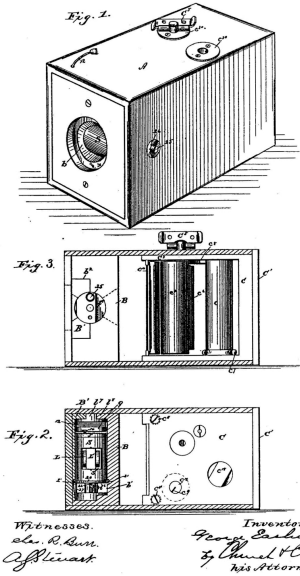


# England, 1566

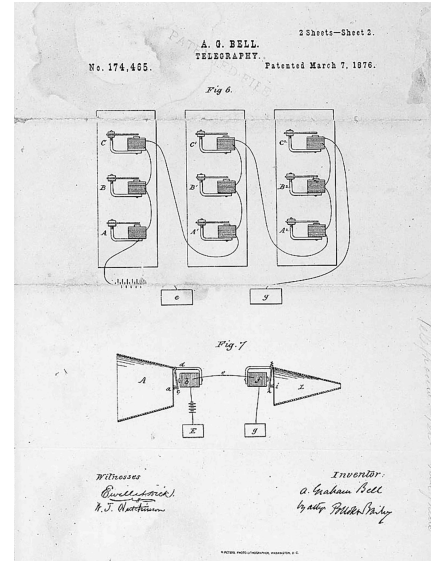
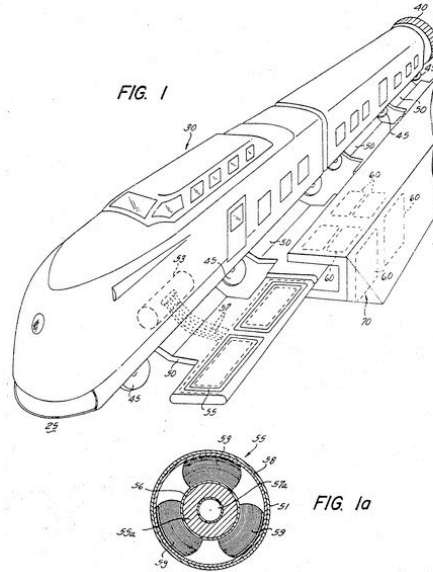


# Today: USA

(No Model.)  
**G. EASTMAN.**  
 CAMERA.  
 No. 388,860. Patented Sept. 4, 1888.



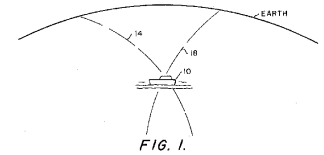
Oct. 7, 1969  
**J. R. POWELL, JR. ET AL**  
 ELECTROMAGNETIC INDUCTIVE SUSPENSION AND STABILIZATION  
 SYSTEM FOR A GROUND VEHICLE  
 Filed Nov. 21, 1967  
 3,470,828  
 8 Sheets-Sheet 1



PATENTED JAN 29 1974  
 SHEET 1 OF 2  
 3,789,409

Q-2  
 SATELLITE

Q-4  
 SATELLITE



# What is a patent? New. Useful. Non-obvious.

“A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, **a new way of doing something**, or offers a **new technical solution to a problem**. To get a patent, technical information about the invention must be disclosed to the public in a patent application.”

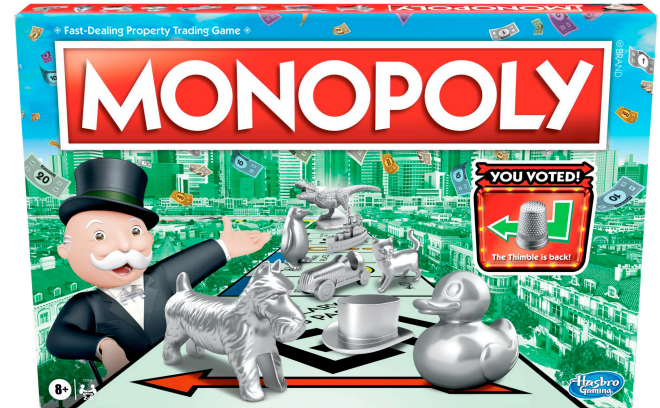


<https://www.wipo.int/patents/en>



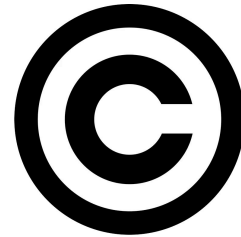
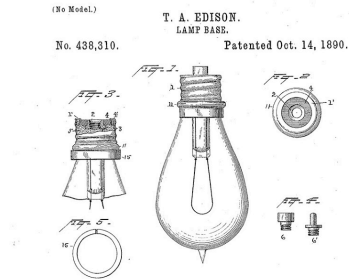
# What rights do patents grant?

- Patents **don't** give you the right to make, use, or sell an invention.
- Patents **do** give you the right to **exclude others** from making, using, and selling an invention for the term of a patent (20 years)
  - stop or sue others
  - licensing and royalties



# What's the difference? Patents vs. Copyright

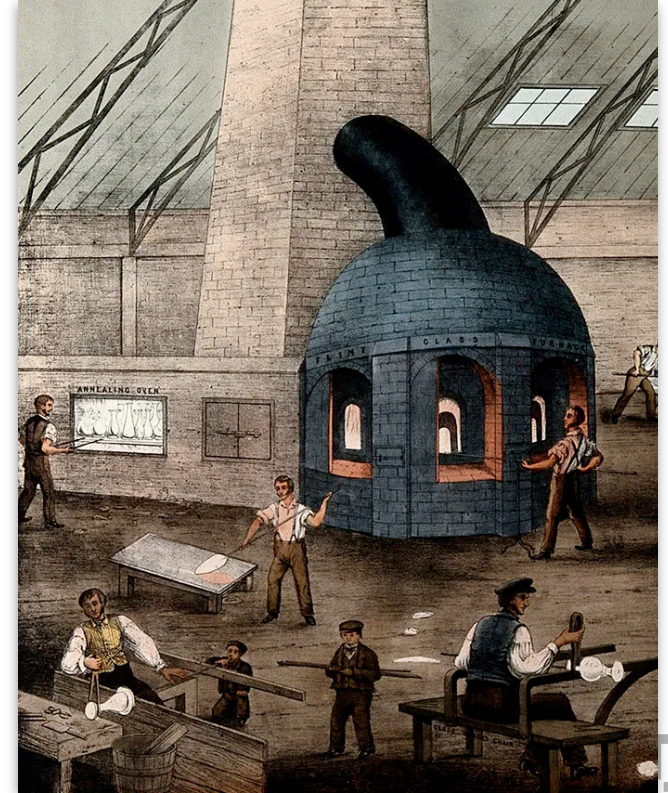
- Copyrights cover the details of expression of a work.
- Copyrights don't cover any ideas.  
Patents only cover ideas and the use of ideas.
- Copyrights happen automatically.  
Patents are issued by a patent office in response to an application.





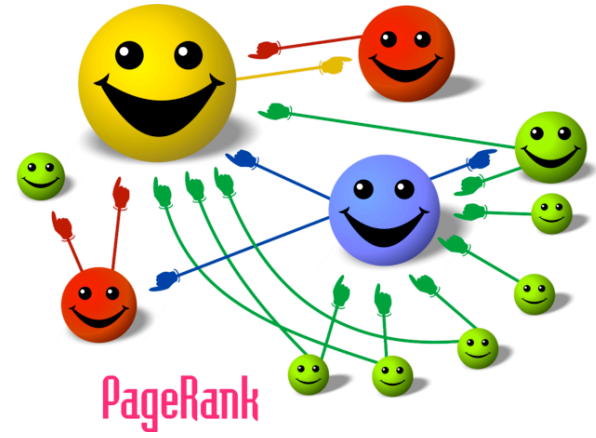
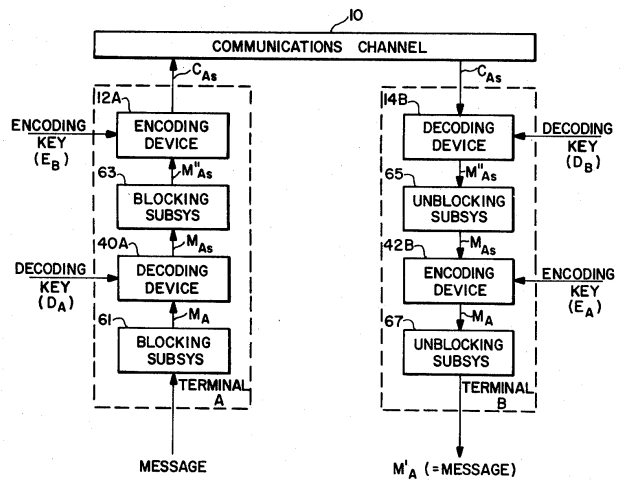
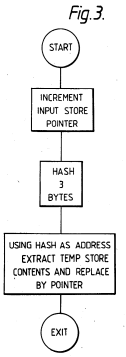
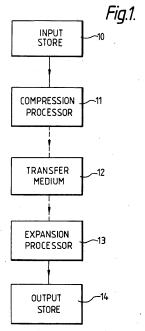
# Why do patents exist?

- Encourage disclosure of inventions
- Reward invention and creativity
- Protect investment of capital into R&D
- Encourage the market to “design around”
- Protect small companies from large ones



# Software Patents

U.S. Patent Oct. 20, 1987 Sheet 1 of 6 4,701,745




# Patent or not?

# Patent or not?

1. Running bingo on a computer
2. Using a computer to help users plan meals while achieving diet goals
3. Using a computer to order a pizza with customized toppings
4. Prompting a user before establishing a new network connection
5. Automatically notifying users when an item is picked up or delivered
6. Using a computer network to ask people to complete tasks and then wait for them to do them
7. Using SMS to perform tasks (e.g., checking bank balance)
8. Selecting ALL images in a CAPTCHA that match a given text

**The software patent system is broken!**

# Alice vs. CLS Bank (2014)

Case	Claimed Invention		Result
<i>Alice Corp. v. CLS Bank</i> (June 19, 2014)	Method of computerized risk mitigation in financial settlements	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     ✗ Step 1 ✗ Step 2                 </div>	<b>NOT Patent Eligible</b> Why? Risk mitigation is a long-standing “fundamental economic practice” (step 1) and the claims merely required generic computer implementation (step 2)
<i>Digitech</i> (July 11, 2014) 	Method of digital image processing; used “device profiles” to organize devices’ spatial and color properties	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     ✗ Step 1 ✗ Step 2                 </div>	<b>NOT Patent Eligible</b> Why? Claimed “device profile” was intangible; method claims covered organization of information untethered to specific structure.
<i>buySAFE v. Google</i> (Sep. 3, 2014)	Online transaction performance guarantee	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     ✗ Step 1 ✗ Step 2                 </div>	<b>NOT Patent Eligible</b> Why? The claims are about creating a contractual relationship that is performed by any general purpose computer.
<i>Ultramerical v. Hulu</i> (Nov. 14, 2014)	Internet-distribution of copyright material	<div style="border: 1px solid black; padding: 5px; text-align: center;">                     ✗ Step 1 ✗ Step 2                 </div>	<b>NOT Patent Eligible</b> Why? Offering media in exchange for viewing an advertisement is an abstract idea. Implementing it on the internet does not transform it into patent eligible.



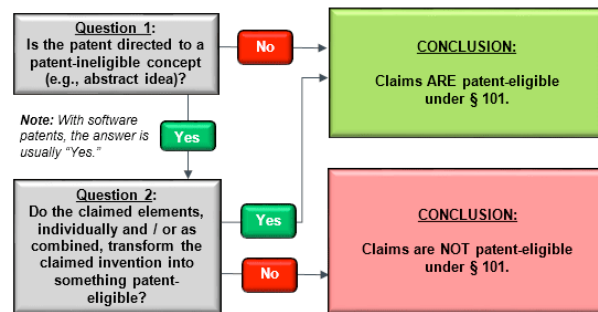
ars TECHNICA SUBSCRIBE 🔍 SIGN IN

POLICY —

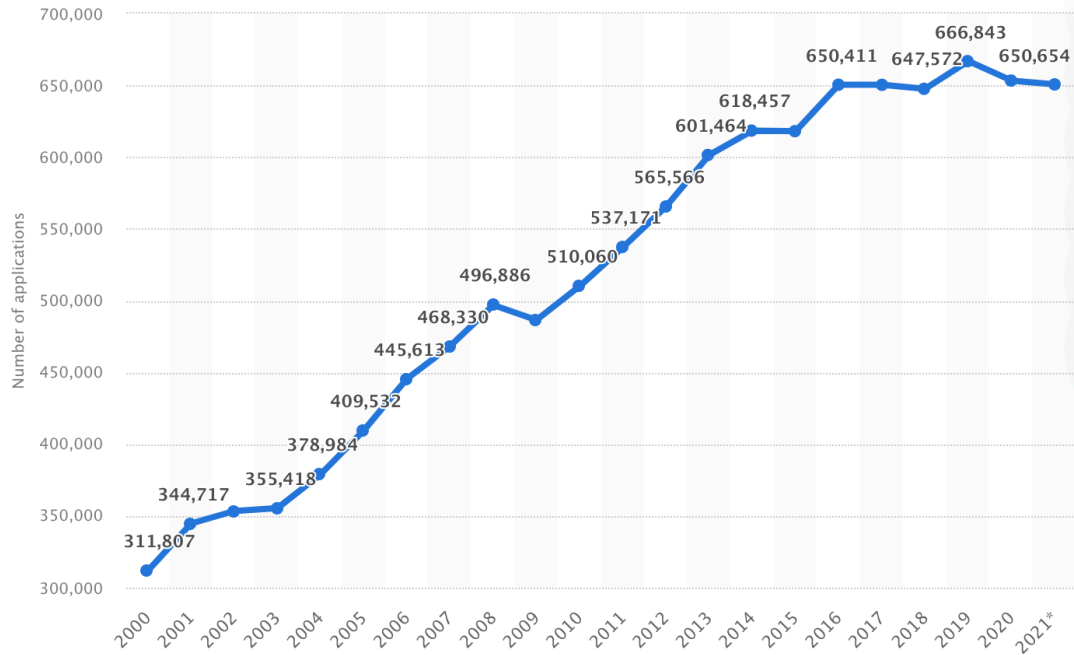
## Supreme Court smashes “do it on a computer” patents in 9-0 opinion

Court declines to stop software patents altogether.

JOE MULLIN - 6/19/2014, 12:08 PM



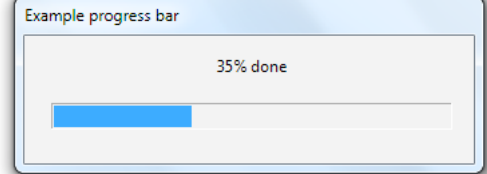
# Problem: Inventive step and non-obviousness



or 1-Click Checkout



US5960411A



US5301348A

# Problem: Long patent pendencies and terms

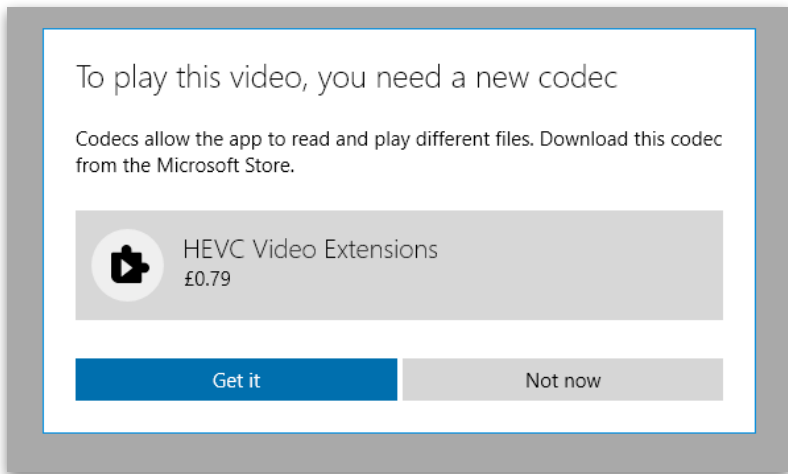
TABLE 4: **PATENT PENDENCY STATISTICS (FY 2021)**

Utility, Plant, Reissue Pendency Statistics by Technology Center (in months)	Average First Action Pendency	Total Average Pendency
<b>Total Utility, Plant, and Reissue Pendency</b>	<b>16.9</b>	<b>23.3</b>
Tech Center 1600—Biotechnology and Organic Chemistry	17.0	24.0
Tech Center 1700—Chemical and Materials Engineering	18.8	26.7
Tech Center 2100—Computer Architecture, Software, and Information Security	17.5	25.6
Tech Center 2400—Networks, Multiplexing, Cable, and Security	15.7	22.9
Tech Center 2600—Communications	13.5	19.9
Tech Center 2800—Semiconductor, Electrical, Optical Systems, and Components	15.7	22.3
Tech Center 3600—Transportation, Construction, Agriculture, and Electronic Commerce	18.1	25.9
Tech Center 3700—Mechanical Engineering, Manufacturing, and Products	18.6	26.7



# Problem: Incompatibility

- PNG was invented to avoid GIF patent issues
- Opus is a patent-free MP3 alternative
- AV1 vs H265



# Problem: Independent discovery doesn't matter!

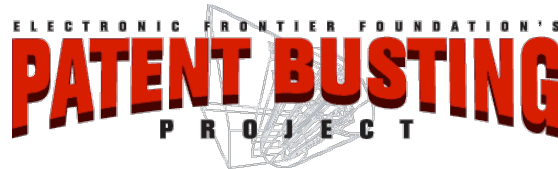
“The idea that I can be presented with a problem, set out to logically solve it with the tools at hand, and wind up with a program that could not be legally used because someone else followed the same logical steps some years ago and filed for a patent on it is horrifying.”

*John Carmack*



# Problem: Only large organizations benefit

- **The patent system relies on people to challenge bad patents**
  - requires considerable time, money, and legal expertise
  - the US legal system requires both parties to pay legal fees (c.f., losers pay costs in Europe) \*
- US software patents cost between **\$15,000 to \$45,000!**
  - that's before you even apply for international patents!



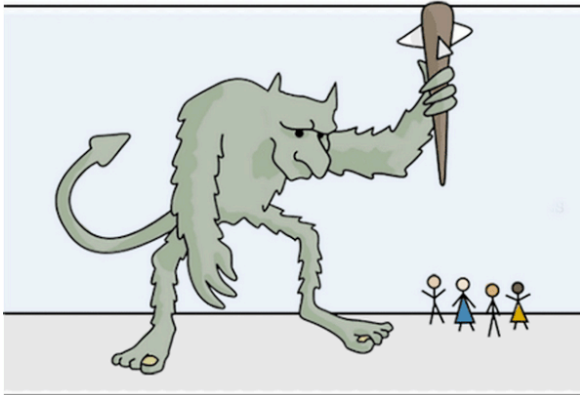
<https://www.patenttrademarkblog.com/how-much-patent-costs>

<https://www.eff.org/issues/patent-busting-project>



# Problem: Non-Practicing Entities (Patent Trolls)

PATENT TROLLS ARE A PROBLEM IN THE U.S.



**Patent trolls hijack ideas and extort money from those who do the real work.**

Today the Administration is taking action to protect innovators and ensure the highest-quality patents in our system.

WH.GOV/PATENTTROLLS

JUNE 4, 2013



A screenshot of a BBC News article. The top navigation bar includes "BBC", "Home", "News", "Sport", "Reel", and "Worklife". The main headline is "'Patent trolls' cost other US bodies \$29bn last year, says study". Below the headline is the date "29 June 2012" and a red "Tech" category tag. The article text is partially visible, showing the words "Infringement of patents" and "of \_\_\_\_\_ which are alleged to be infrin". At the bottom, there is a "THINKSTOCK" logo and a small line of text: "Patent portfolio owners say their actions help incentivise inventors to carry out research".

# Problem: Innovation is Stifled

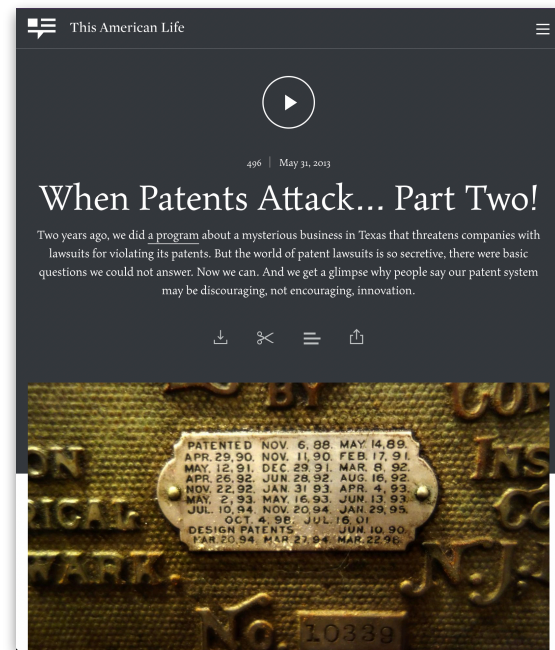
“As a developer for a small startup, absurd software patents are a constant worry. Stories abound of people like us getting pressured out of existence over the use of incredibly vague, basic interface elements and system components.”

“Software patents are generally written in vague and nontechnical legal language, which obfuscates the patent in question . . . and also makes it easy to dramatically extend the patent to elements not considered at all when the patent was originally filed.”



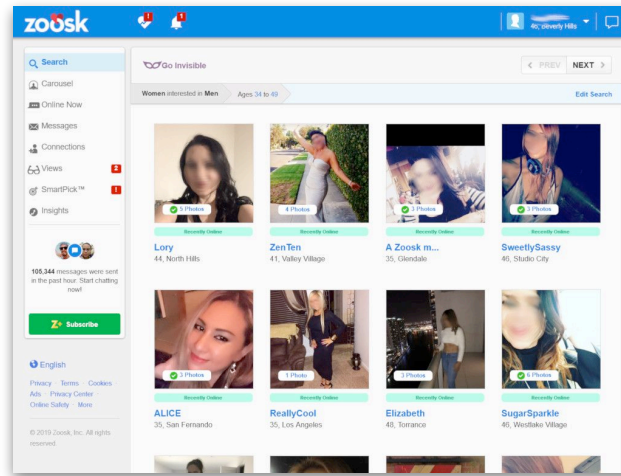
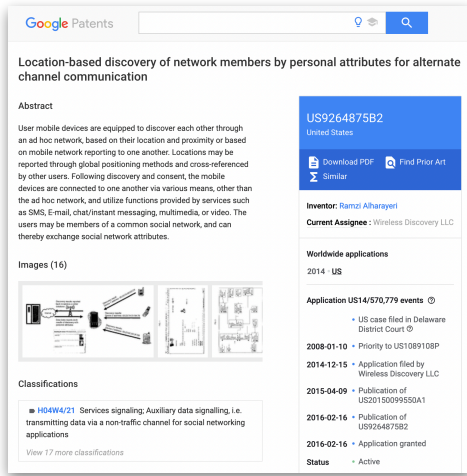
# This American Life: When Patents Attack!

- Innovatio sued libraries and coffee shops for providing WiFi in a public space
- Boadin has sued various media outlets, claiming that its patents are infringed whenever a word or phrase on your computer autocompletes
- NPHJ claims they hold a patent on “scanning and emailing documents”. They tried to sued non-profits for \$1000 per employee in damages.



<https://www.thisamericanlife.org/496/when-patents-attack-part-two>





- Zoosk has a website that mobile devices can connect to
- Zoosk's server collects information from the mobile devices, including location and unique device identifiers
- Zoosk users can send and accept invitations to connect with and send messages to each other.
- Zoosk shares profile information of connected users, who are “members of a same social network” (i.e., they're on Zoosk)
- Zoosk can connect users who are in the immediate vicinity of each other, or a particular distance away

<https://www.eff.org/deeplinks/2022/05/patent-troll-uses-ridiculous-people-finder-patent-sue-small-dating-companies>



# Problem: Open Source is under attack, too!

5 MIN READ

## Ensuring Patents Foster Innovation in Open Source

DAN WHITING | 23 JUNE 2022

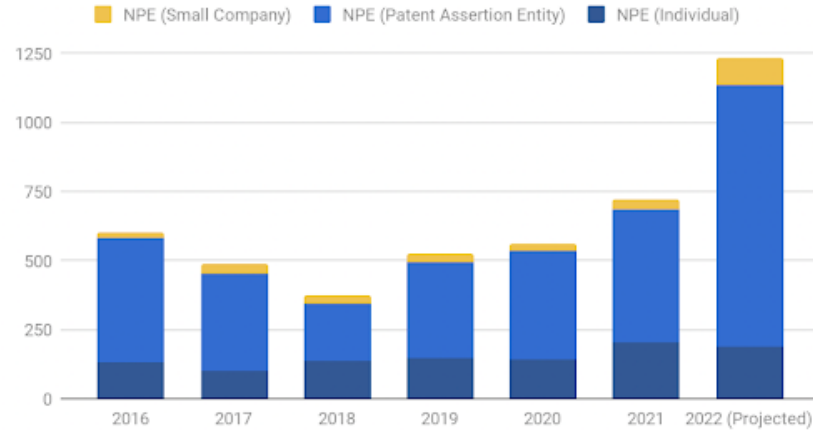
So, I am old enough to remember when the U.S. Congress temporarily intervened in a patent dispute over the technology that powered BlackBerries. A U.S. Federal judge ordered the BlackBerry service to shutdown until the matter was resolved, and Congress determined that BlackBerry service was too integral to commerce to be allowed to be turned off. Eventually, RIM settled the patent dispute and the BlackBerry rode off into technology oblivion.

I am not here to argue the merits of this nearly 20-year-old case (in fact, I coincidentally had friends on both legal teams), but it was when I was introduced to the idea of companies that purchase patents with the goal of using this purchased right to extract money from other companies.

Patents are an important legal protection to foster innovation, but, like all systems, it isn't perfect.

At this week's Open Source Summit North America, we heard from Kevin Jakes with Unified Patents. Kevin is a patent attorney who saw damage being done to innovation by patent trolls – more kindly known as non-practicing entities (NPEs).

### Litigation Targeting Open Source Technologies



\*\*\*Data collected through June 6, 2022\*\*\*

Home / Business / Enterprise Software

## Patent troll attacks against open source projects are up 100% since last year. Here's why

In recent years, patent trolls have started attacking open-source developers and companies. But, the open-source community is fighting back.

Written by Steven Vaughan-Nichols, Senior Contributing Editor on Sept. 12, 2022

in f t



# What next?

- Alternative licensing models
  - The Defensive Patent License (DPL)
  - The Open Invention Network (OIN)
  - License on Transfer (LOT)
- Bogus patent bounties
- [Unified Patents](#)
- Commonsense reform
- **Abolish software patents?**

