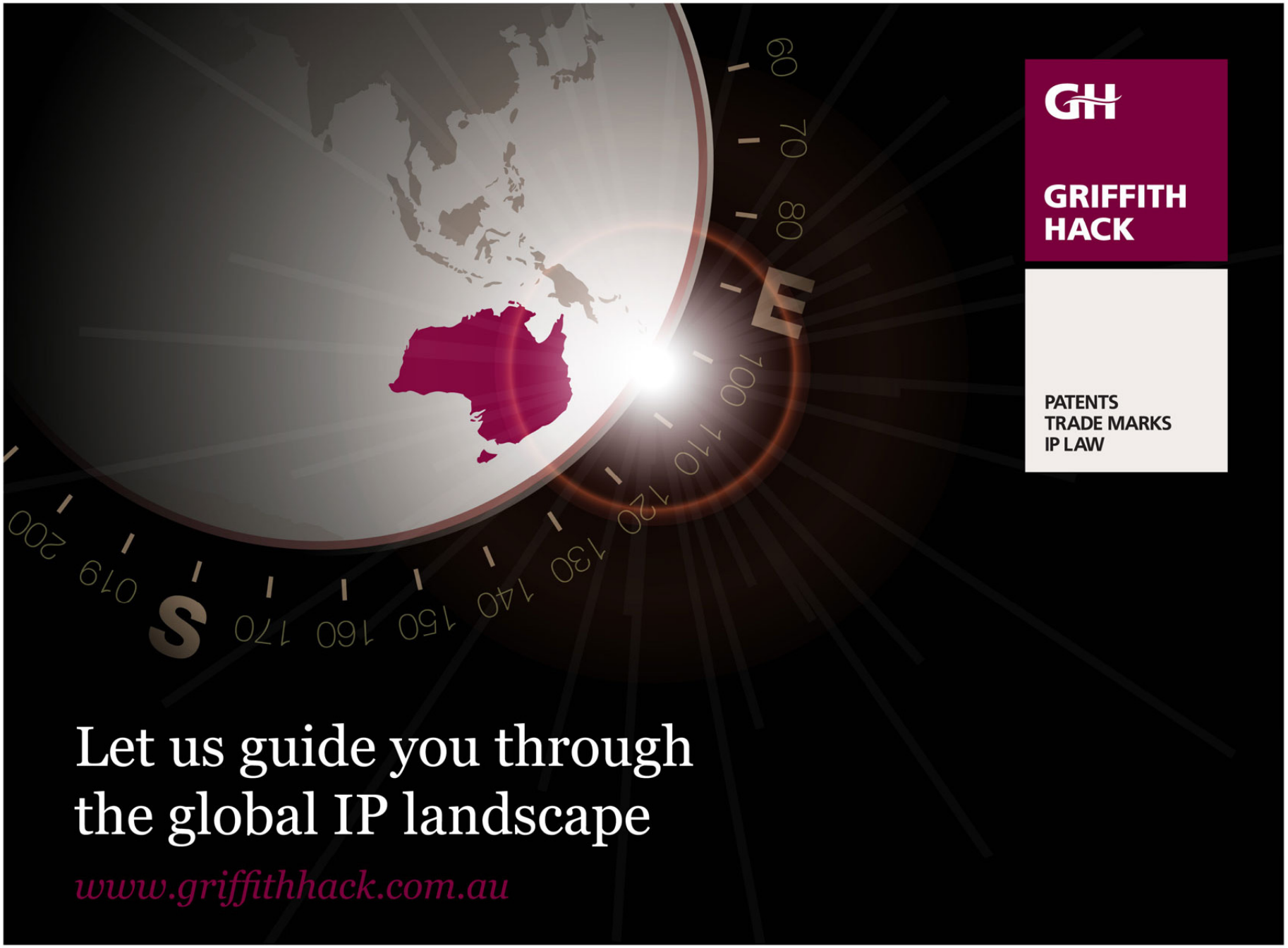
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Use of Network Patent Analysis (NPA) for advanced analysis of patent data

Creating business advantage from patent insight

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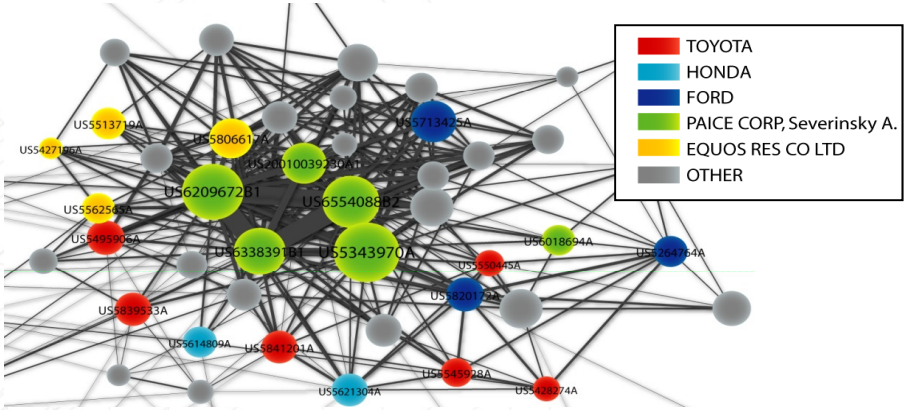
- Mike Lloyd, Doris Spielthenner, and George Mokdsi

- 5th June 2012



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1. Introduction to NPA

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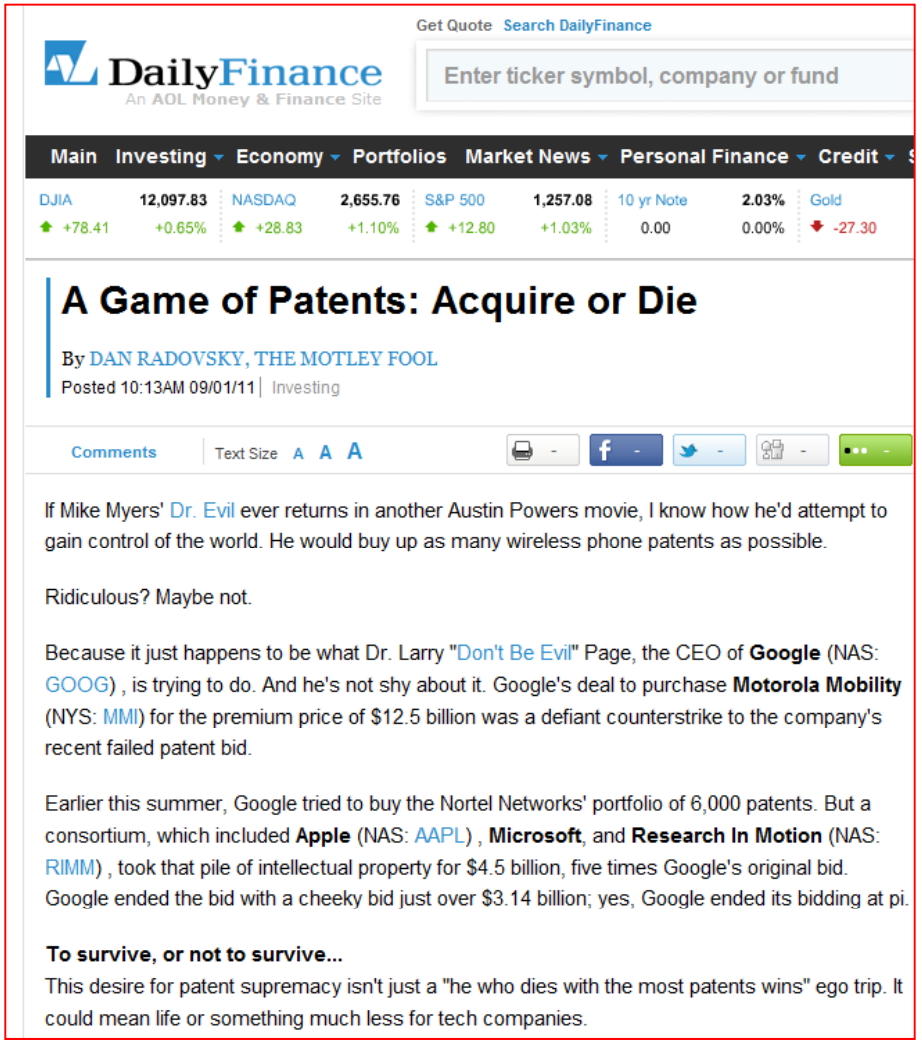
Patents are becoming big business...



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+78.41	+0.65%	+28.83	+1.10%	+12.80	+1.03%	0.00	0.00%	-27.30

A Game of Patents: Acquire or Die

By DAN RADOVSKY, THE MOTLEY FOOL
Posted 10:13AM 09/01/11 | Investing

Comments Text Size A A A

If Mike Myers' Dr. Evil ever returns in another Austin Powers movie, I know how he'd attempt to gain control of the world. He would buy up as many wireless phone patents as possible.

Ridiculous? Maybe not.

Because it just happens to be what Dr. Larry "Don't Be Evil" Page, the CEO of **Google** (NAS: GOOG) , is trying to do. And he's not shy about it. Google's deal to purchase **Motorola Mobility** (NYS: MMI) for the premium price of $12.5 billion was a defiant counterstrike to the company's recent failed patent bid.

Earlier this summer, Google tried to buy the Nortel Networks' portfolio of 6,000 patents. But a consortium, which included **Apple** (NAS: AAPL) , **Microsoft**, and **Research In Motion** (NAS: RIMM) , took that pile of intellectual property for $4.5 billion, five times Google's original bid. Google ended the bid with a cheeky bid just over $3.14 billion; yes, Google ended its bidding at pi.

To survive, or not to survive...
This desire for patent supremacy isn't just a "he who dies with the most patents wins" ego trip. It could mean life or something much less for tech companies.

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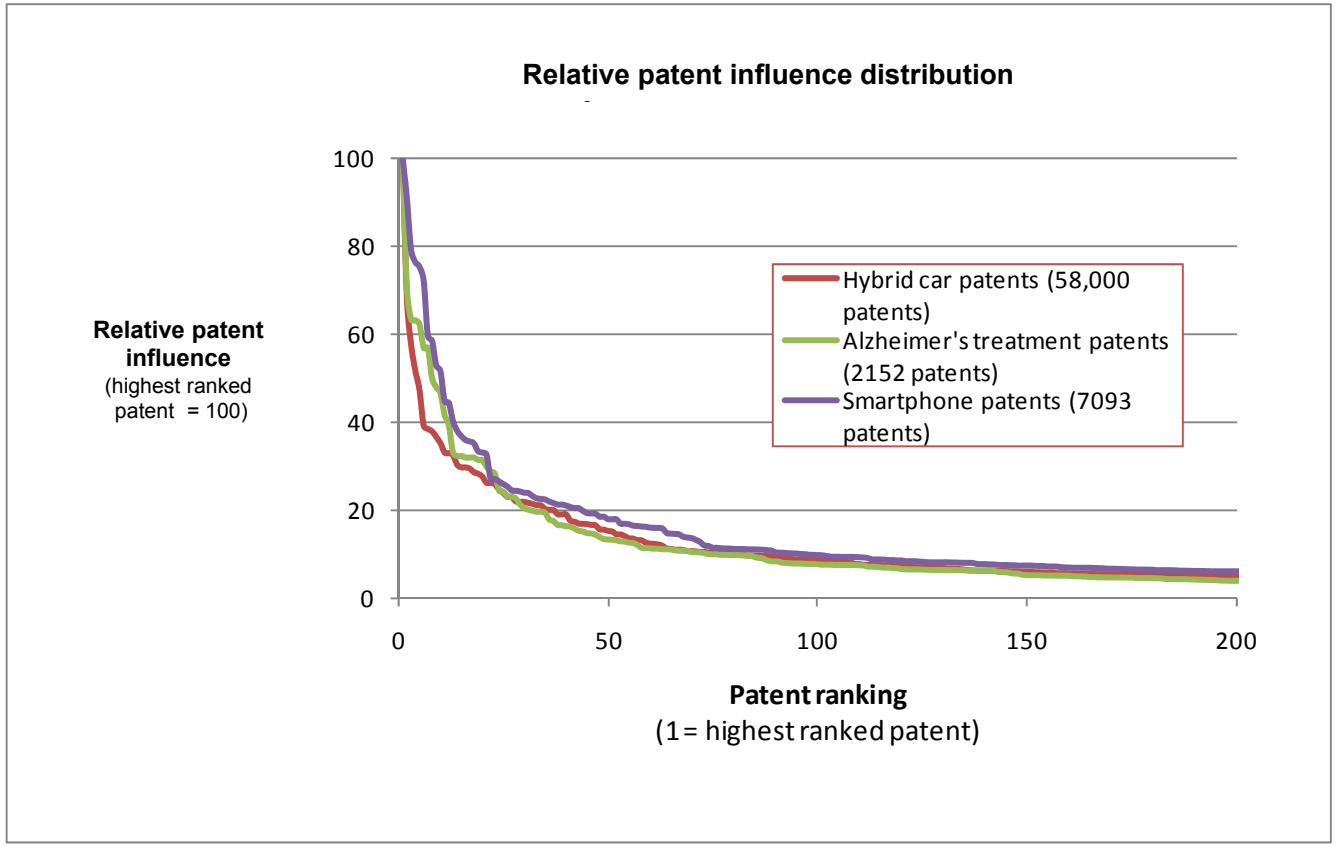
But which patents? It is self-evident that patents have a range of values..



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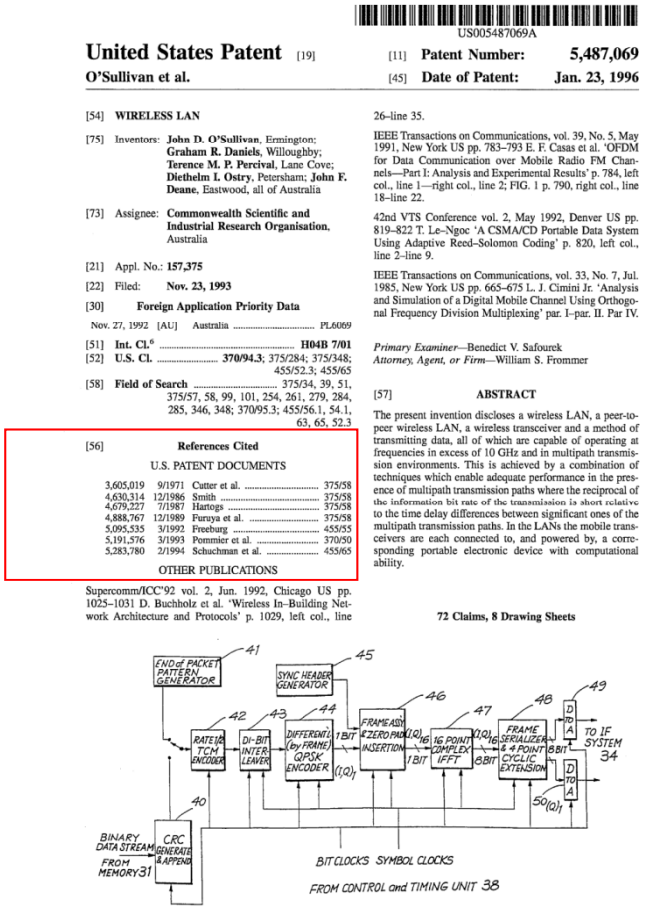
NPA is based on patent citations

Patent citations



US005487069A

United States Patent [19]
O'Sullivan et al.

[11] **Patent Number: 5,487,069**
[45] **Date of Patent: Jan. 23, 1996**

[54] **WIRELESS LAN**

[75] Inventors: **John D. O'Sullivan**, Ermington; **Graham R. Daniels**, Willoughby; **Terence M. P. Percival**, Lane Cove; **Diethelm I. Ostry**, Petersham; **John F. Deane**, Eastwood, all of Australia

[73] Assignee: **Commonwealth Scientific and Industrial Research Organisation**, Australia

[21] Appl. No.: **157,375**

[22] Filed: **Nov. 23, 1993**

[30] **Foreign Application Priority Data**

Nov. 27, 1992 [AU] Australia PL6069

[51] **Int. Cl.**[6] **H04B 7/01**

[52] **U.S. Cl.** **370/94.3**; 375/284; 375/348; 455/52.3; 455/65

[58] **Field of Search** 375/34, 39, 51, 375/57, 58, 99, 101, 254, 261, 279, 284, 285, 346, 348; 370/95.3; 455/56.1, 54.1, 63, 65, 52.3

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Primary Examiner—Benedict V. Safourek
Attorney, Agent, or Firm—William S. Frommer

[57] **ABSTRACT**

The present invention discloses a wireless LAN, a peer-to-peer wireless LAN, a wireless transceiver and a method of transmitting data, all of which are capable of operating at frequencies in excess of 10 GHz and in multipath transmission environments. This is achieved by a combination of techniques which enable adequate performance in the presence of multipath transmission paths where the reciprocal of the information bit rate of the transmission is short relative to the time delay differences between significant ones of the multipath transmission paths. In the LANs the mobile transceivers are each connected to, and powered by, a corresponding portable electronic device with computational ability.

72 Claims, 8 Drawing Sheets

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Each patent citation provides two powerful and valuable insights

1) Both patent applicants thought that the subject matter they filed their patents in was **important and valuable** enough to invest in a patent filing (whether the later applicant knew about the earlier patent or not)
2) Either the examiner or applicant for the later patent thought that the earlier patent was **similar enough to disclose a similar feature.** In other words, human intelligence has been used to make connections between patents.

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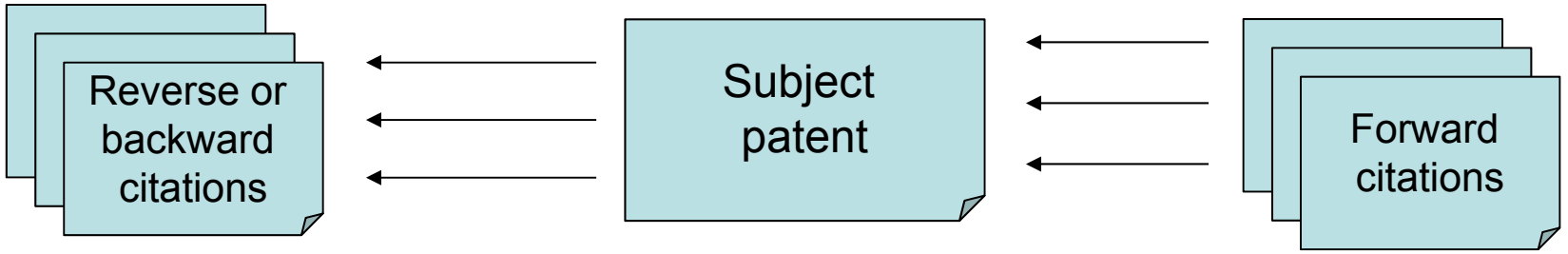
Most patents have both forward and backward citations



Earlier patents considered to be similar

Later patents considered to be similar

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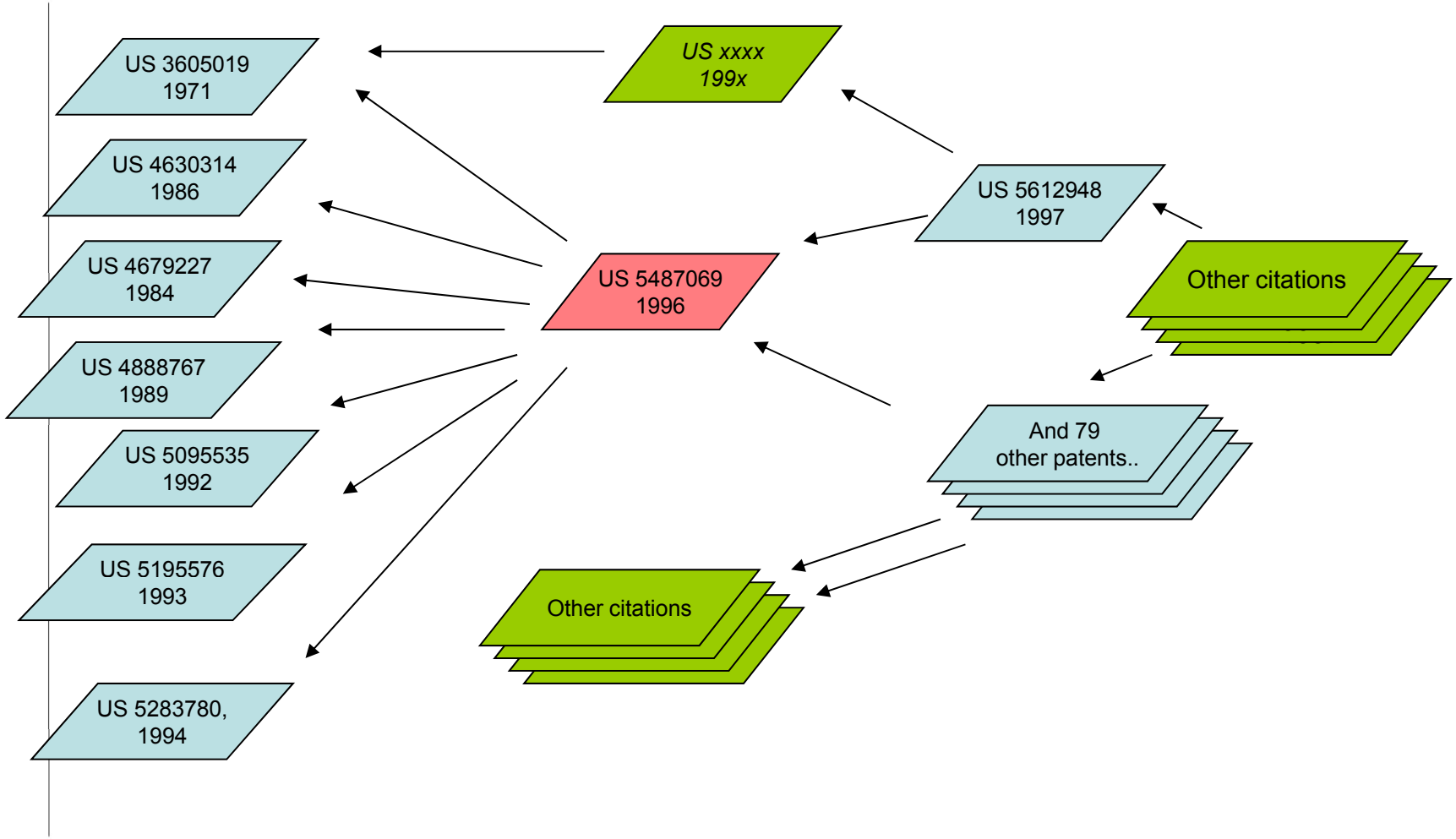
Citations in turn lead to other citations..



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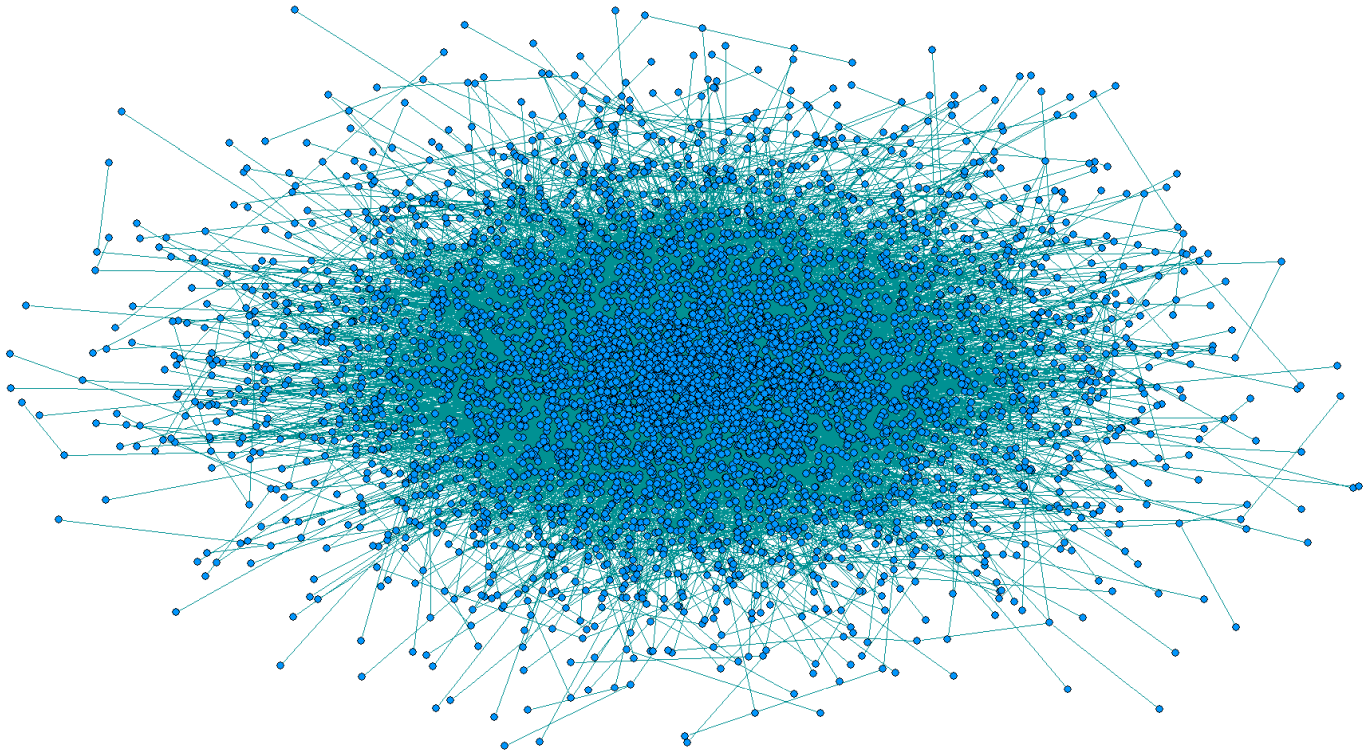
But the sheer quantity of citation data can quickly overwhelm ….



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NPA uses algorithms to identify the most connected patents, and then cluster and rank patents within these networks:

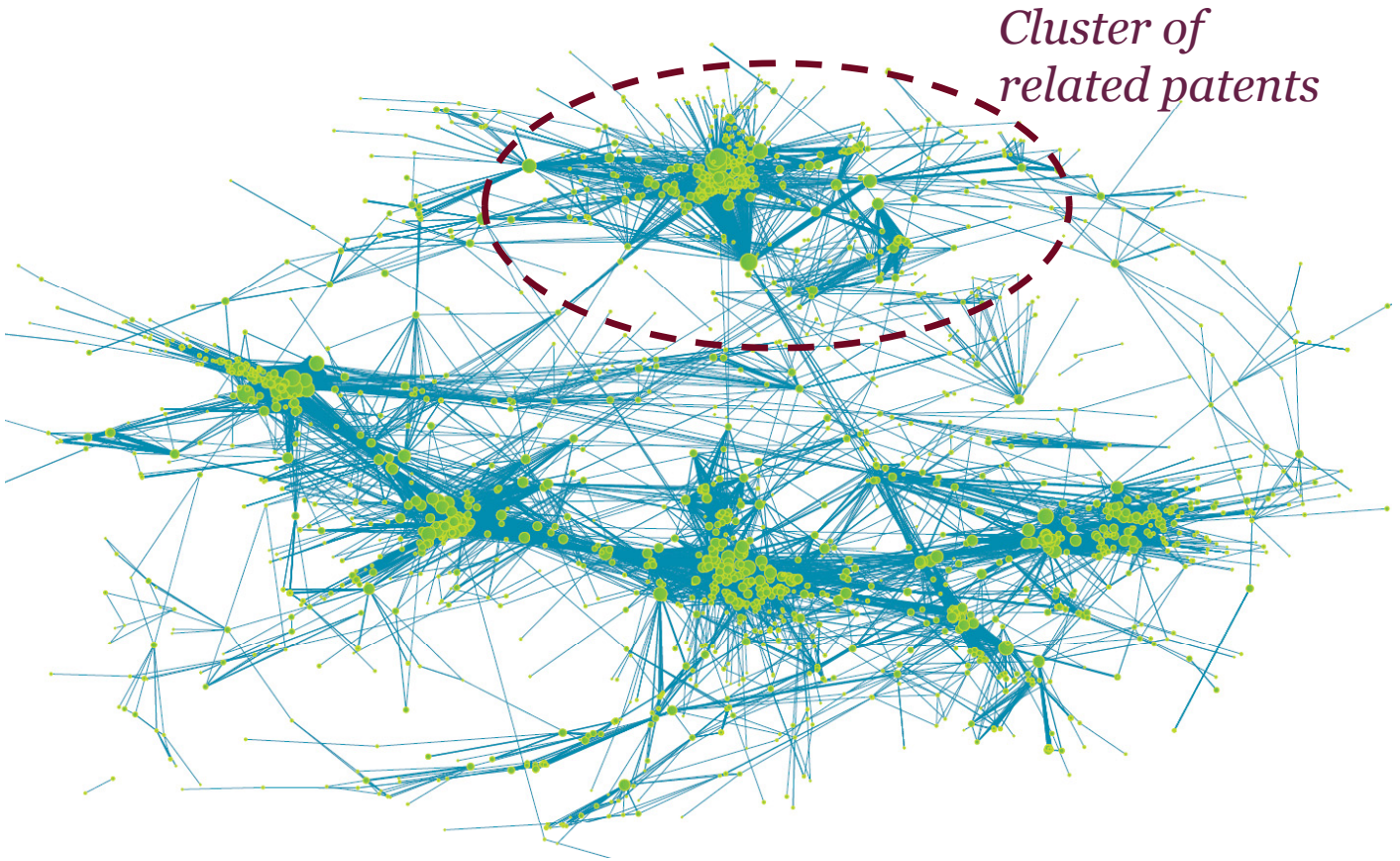

Image taken from a study of 9,000 smartphone patents

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And by doing so, summarising and learning from the collective wisdom encapsulated in the whole of the citation data in the area you are looking at*

* See Surowiecki, James: "The Wisdom of Crowds: Why the Many Are Smarter Than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations", 2004.

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Each cluster of patent filings shows an area of high popularity

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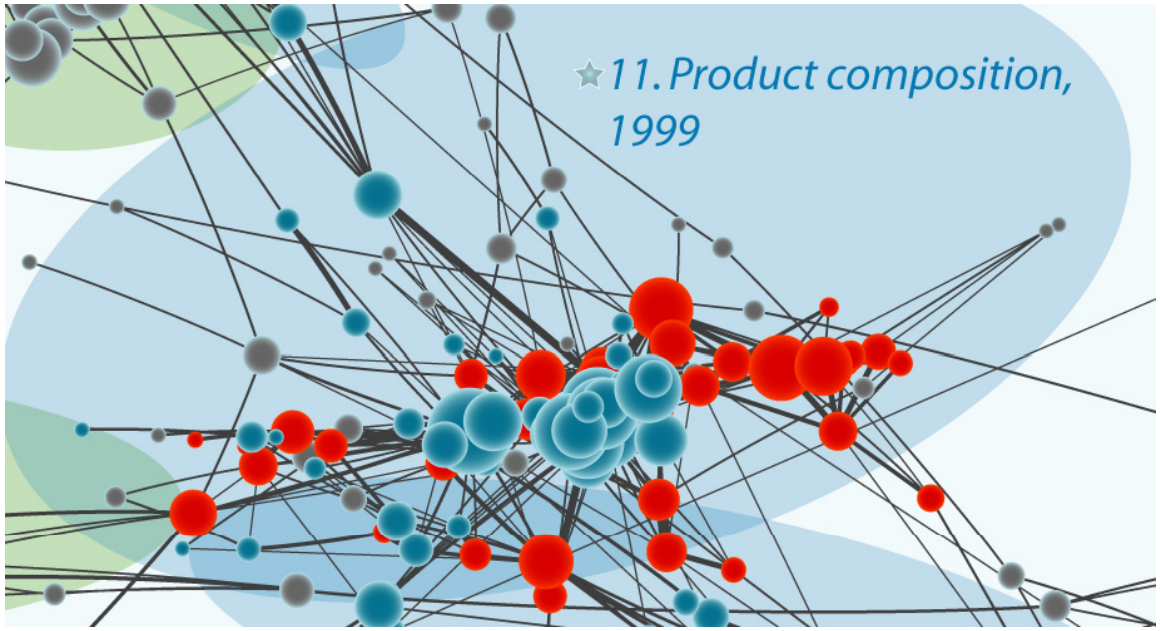

- Blue – client
- Red – competitor
- Bigger dot = more influential patent
- Thicker line = stronger relationship
- Adjacent patents = more similar patents

Results are taken from an NPA analysis of 250,000 engineering patents

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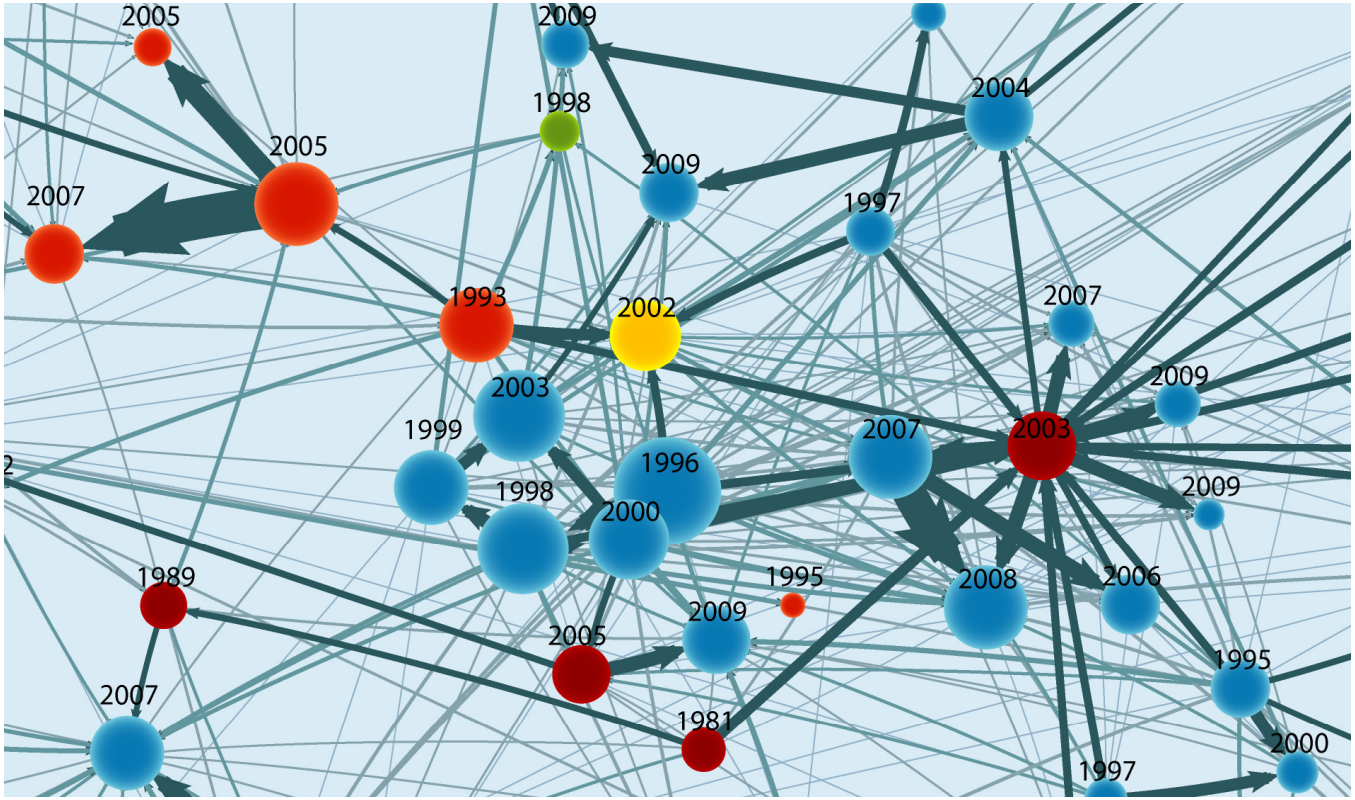
Each citation has a direction, which can provide information about technology development, or 'knowledge flow' between competitors



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Does NPA work?

NPA patent influence rankings gave better predictions of Alzheimers drug trial patents than other rankings based on any of:

- *Forward, backward or total citation count*
- *Number of family members*

Drug	Patent protecting drug	NPA ranking	Count					Ranking based on number of (48,000 patents)				
			Forward citations	*Forward citations per year*	*Backward citations*	*Total citations*	*INPADOC family members*	*Forward citations*	*Forward citations per year*	*Backward citations*	*Total citations*	*INPADOC family members*
Bapineuzumab *(Phase III Alzheimers drug)*	US7189819	**1**	14	1.6	304	318	395	~5100	4942	93	95	308
Solanezumab *(Phase III Alzheimers drug)*	US7195761	**14**	15	1.9	35	50	52	~4800	3949	~2750	~3170	~4400
Phase II trial Alzheimer's drug	US7xxxxxx	**~around 200th**	18	0	0	18	~30	~37,000	~21,400	~4750	~9830	~12,000

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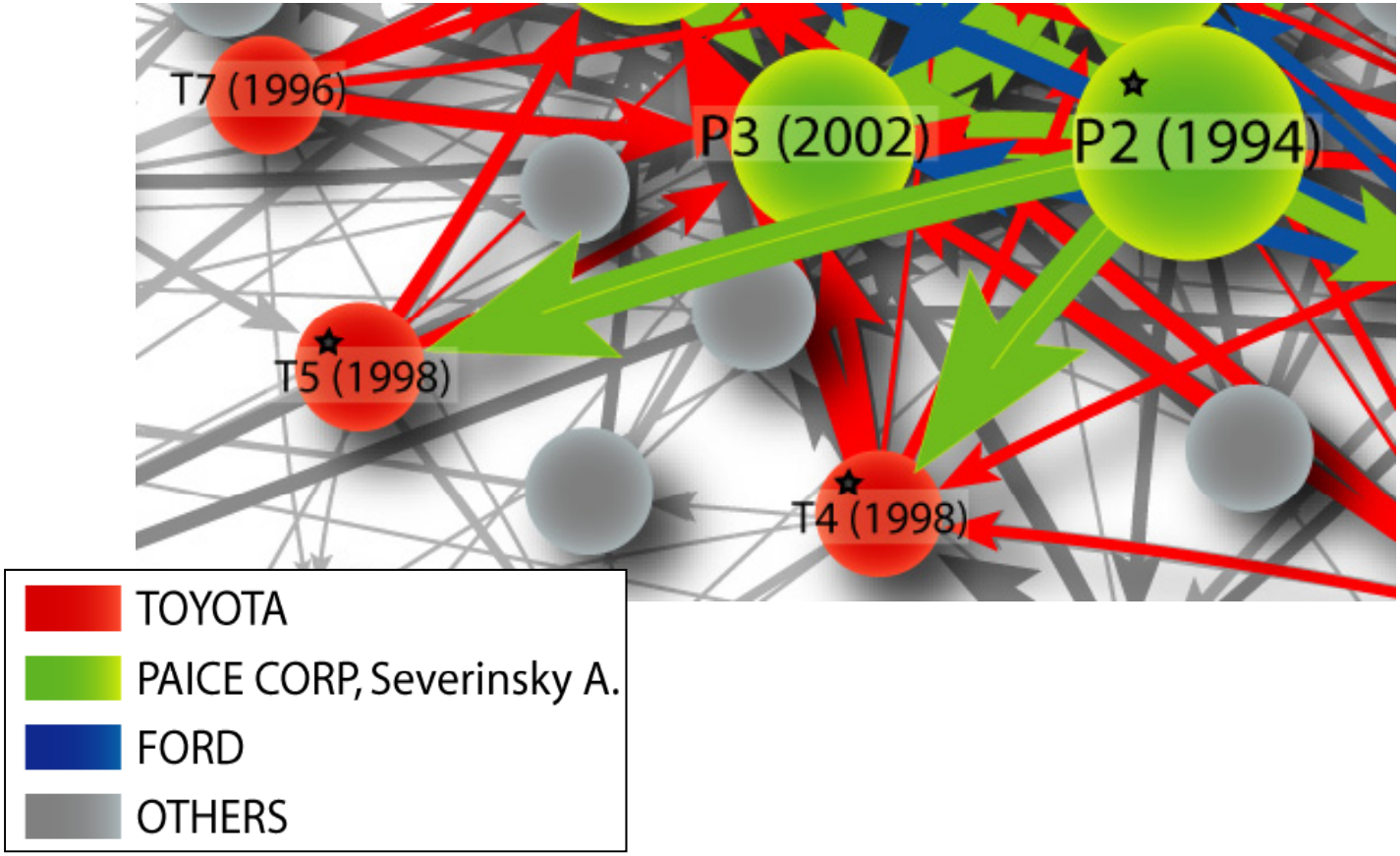
Weighted forward citation arrows have correlated to successful litigation



Results are taken from an NPA analysis of 72,000 hybrid car patents

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2. NPA in practice

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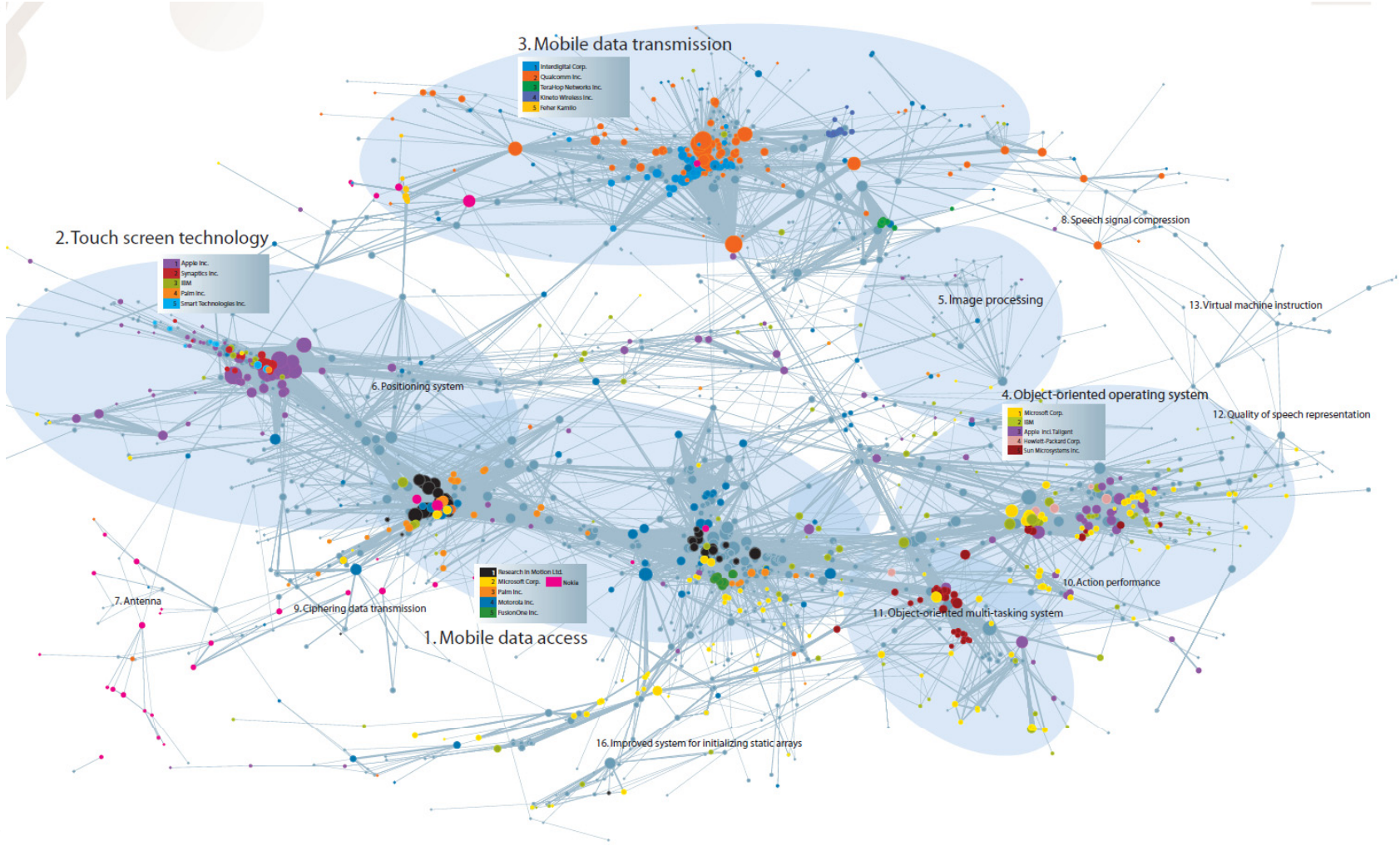
Patent portfolio strength can be quantified, on a cluster by cluster basis



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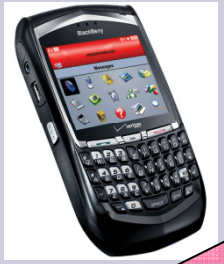
Up and coming patents can determined soon after filing, allowing analytical prediction of potential technology trends

Filing year	2005	2006	2007	2008	2009	2010
Leading smartphone of that year, (CNET, other sources)						
Most influential patents filed in that year (NPA smartphone study)	US20060161871, *Proximity detector in handheld device*, Apple, NPA ranking = 2	US7764274, *Capacitive sensing arrangement*, Apple, NPA ranking = 4th equal,	US7812828, *Ellipse fitting for multi-touch surfaces*, Apple, NPA ranking = 9	US7479949, *Touch screen device, method, and graphical user interface for determining commands by applying heuristics*, Apple, NPA ranking = 146	US20090244031, *Contact Tracking and Identification Module for Touch Sensing*, Apple, NPA ranking = 424	USD628546. *Mobile Phone*, Samsung, NPA ranking = 624

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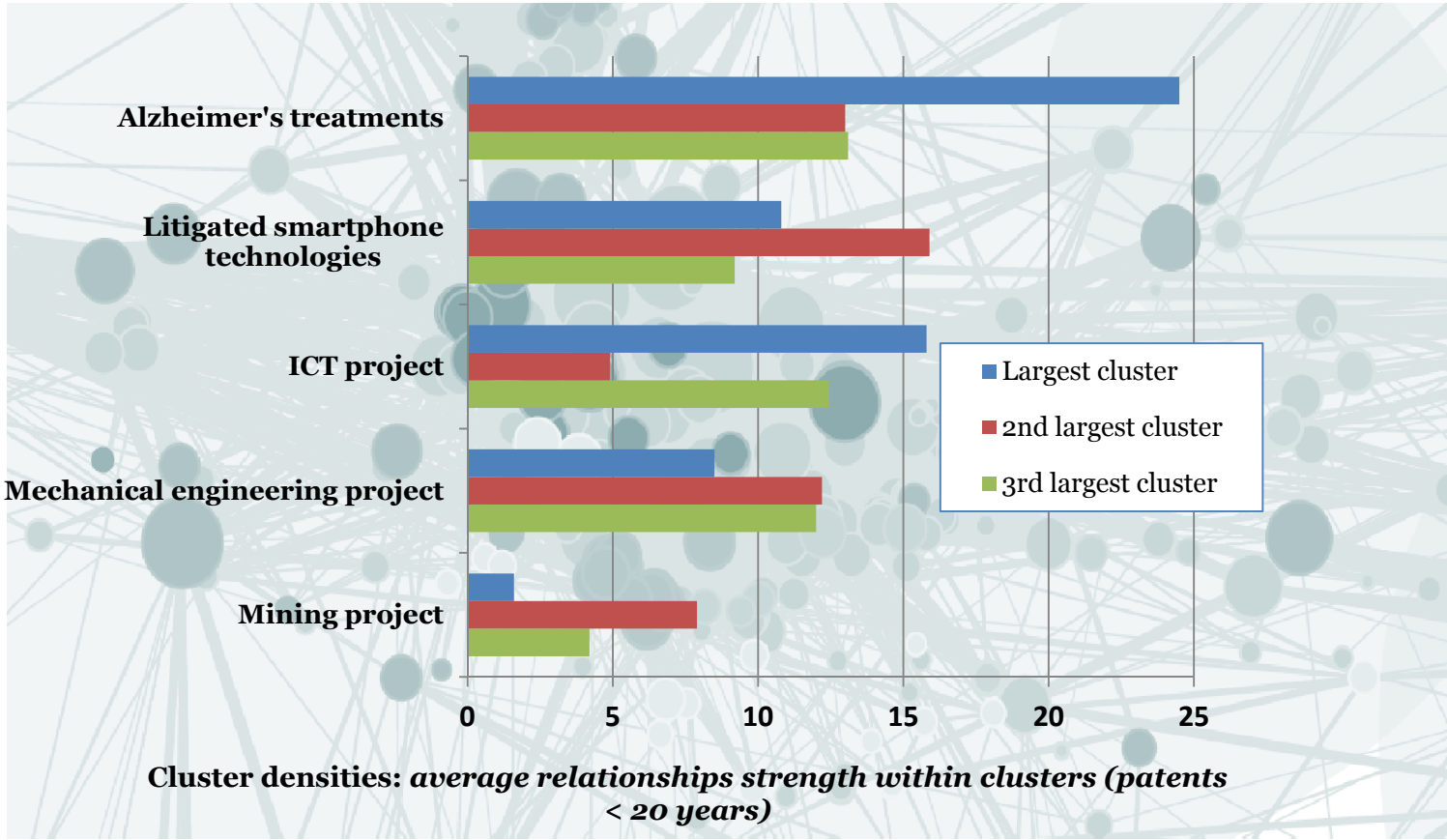
Patent thickets can be quantified



Cluster densities: ***average relationships strength within clusters (patents < 20 years)***

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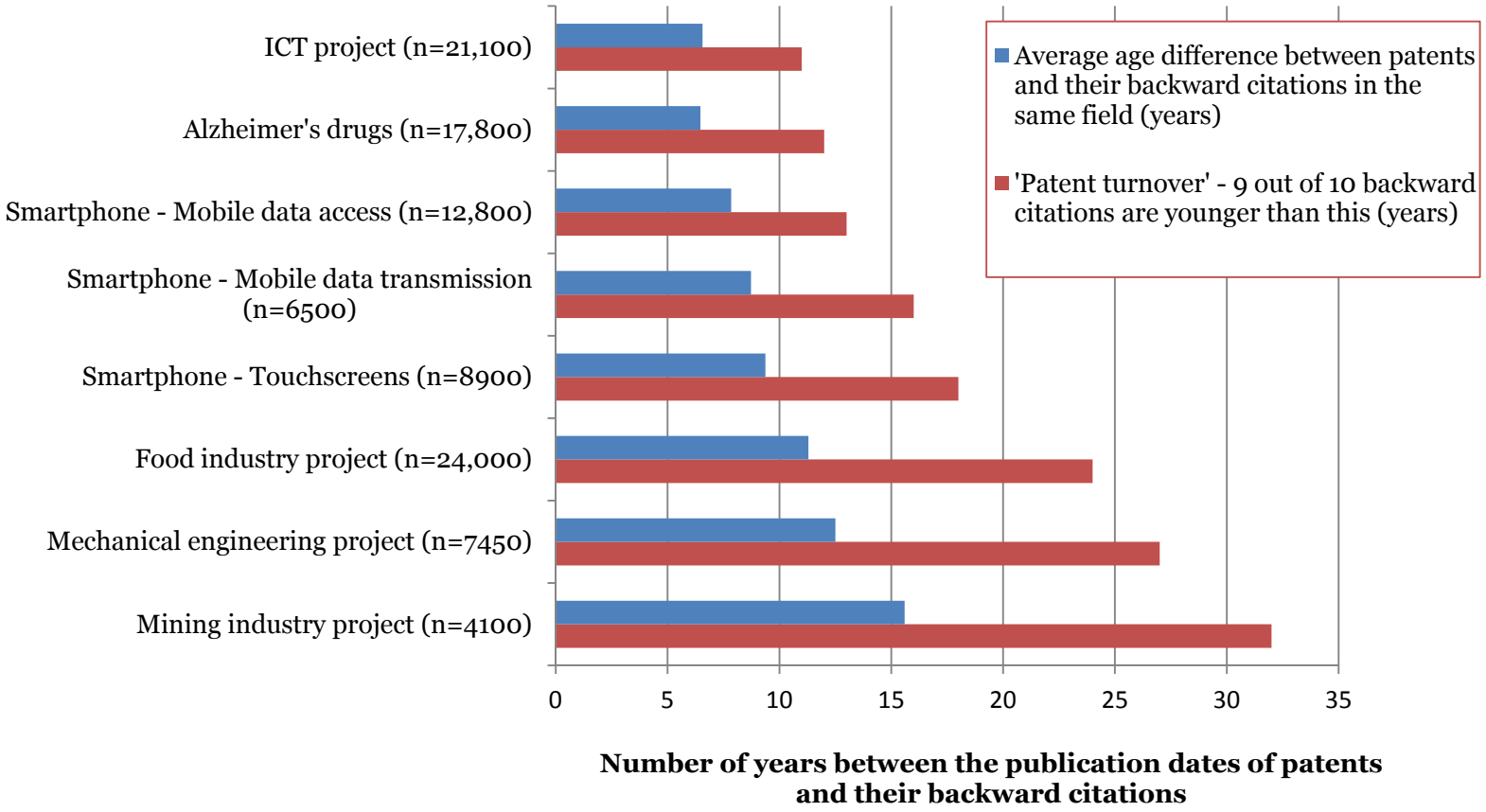
Relative technology turnover can be quantified



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NPA in software form

- **Client studies currently undertaken using consulting model**
- **AmberScope' is now in beta testing**
  - Will provide interactive online view of patent landscape around a nominated patent ('houses in your street')
- **'AmberMap' is being developed**
  - Will provide an interactive online view of the patent landscape in a technology ('houses and suburbs in your city')
  - Similar to what has been presented today, but with new capabilities
- **'Further products in pipeline**
- **See www.ambercite.com for more information and updates**

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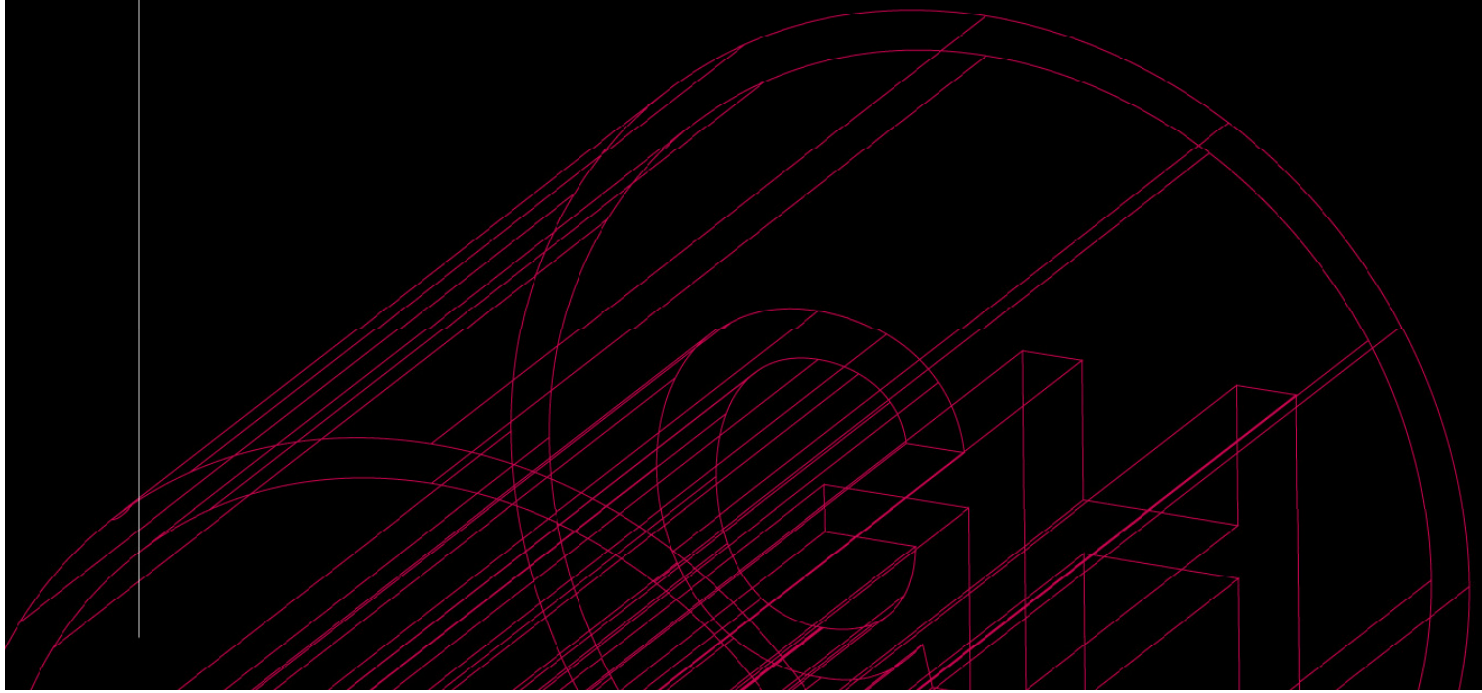
Thank you for your time… any questions?



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