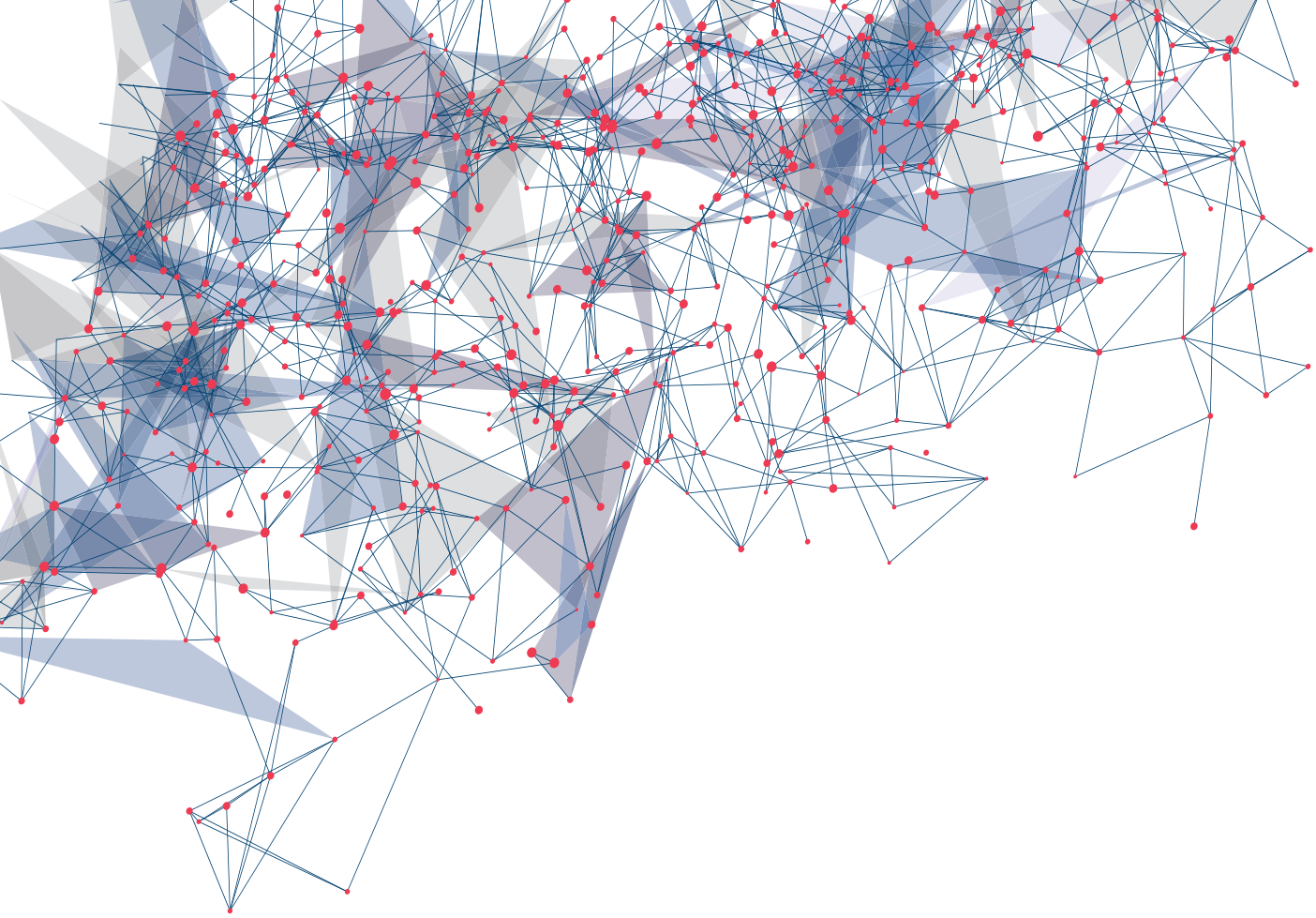

Technology

A sector beyond definition

CIPHER

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We use TLAs (three letter acronyms) gratuitously, the use of 4 letters is typically reserved for those who strive to reduce war or poverty such as NATO and by the time you reach 6 letter you are aiming to save the planet - UNICEF. Where in the spectrum is FAMGA?

FAMGA is the acronym to capture the phenomena caused by Facebook, Apple, Microsoft, Google and Amazon. What is it about these companies that require their own definition? Arguably it is because they cannot be comfortably confined within a single sector definition. When Google reorganised and created Alphabet, it communicated elegantly that it intended to invest across a spectrum of products and services from bioscience to connected homes. Amazon's development of Alexa and their acquisition of Whole Foods evidences a strategy one step short of world domination.

Common to all these companies is their ability to harness disruptive technology and for that reason this report analyses the patented technologies owned by FAMGA companies and how they compare to others. In terms of market cap, they are the among the most valuable companies in the world. However, when plotted on the tectonic plates of innovation and disruption, these organisations face competition like anyone else and from all quarters.

Chart 1 compares FAMGA companies, with BAT (Baidu, Alibaba and Tencent), the Chinese equivalent. This shows a huge diversity in what is protected, not to mention patenting on a massive scale.

Chart 1 FAMGA compared to BAT

	Google	Microsoft	Apple	Amazon	Facebook	Tencent	Baidu	Alibaba
Website and searching	3141	5335	965	657	356	2487	2410	2153
Software	1782	5653	2075	678	239	2178	852	1325
Social network and recommendations	3061	3931	613	1474	1317	1125	464	1647
Data storage	1490	4106	618	1072	330	1733	512	1103
Instant Messaging	1430	2552	519	697	301	2896	650	1612
Hardware	2778	2399	3496	613	324	478	190	177
Video	2094	2449	1403	436	186	1145	280	195
Communication	2337	987	1864	204	170	564	163	208
Image recognition and graphics	1251	2235	836	339	169	821	394	430
Speech recognition	775	867	280	271	25	219	398	62
Navigation and GPS	524	298	286	61	12	127	252	48
Miscellaneous	1568	2426	2243	558	124	593	418	372
TOTAL	**22231**	**33238**	**15198**	**7060**	**3553**	**14366**	**6983**	**9332**

Are we looking in the wrong direction?

As an alternative to analysing whether technology companies disrupt, it can be more instructive to focus on the key technologies. Two of the most ubiquitous are artificial intelligence and cloud computing. Chart 2A and 2B analyse these technologies using classifiers, itself a well-established field of data science. We exclude Chinese patenting, a region we return to later.

Chart 2A Top10 Deep Learning owners (excluding China)

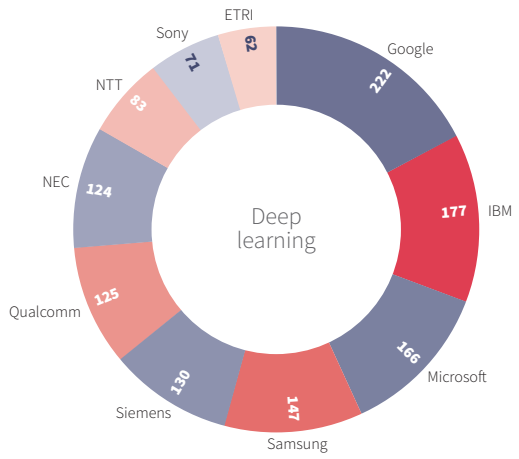
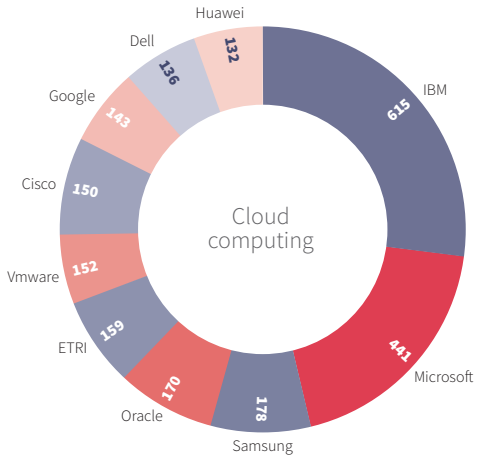


Chart 2B Top 10 Cloud Computing owners (excluding China)



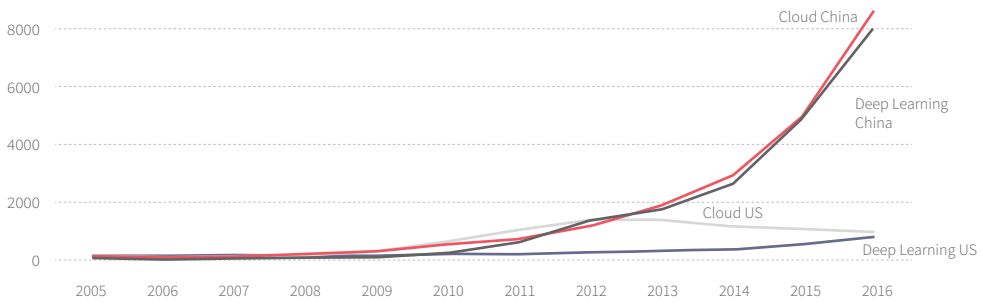
The fact that the top owners in each area differ and that there are over 1,000 unique owners for each technology, suggests that we are heading for a situation where it is not only devices that are connected but companies both within and across sectors. Some commentators equate these technologies to electricity, essential but not determinative of commercial success. While Edison and Westinghouse controlled their markets for a while, history teaches that evolution is continuous. On this analysis, it is the technology which is disruptive, rather than one or more market participant.

Leopards change their spots

The West has been slow to adjust to the fresh approach to patents in China. Analysing the data provides evidence that requires close attention. More patents are filed in China than US and Europe combined. Chart 3 compares the US and China patenting in Deep Learning and Cloud. Data speaks.

These positions of strength are bolstered by significant investment in R&D and M&A. Alibaba has backed Sensetime, Tencent is investing in a range of AI start-ups such as UBtech. Baidu is putting AI at its core including setting up the Baidu Institute of Deep Learning with the full support of the Chinese government.

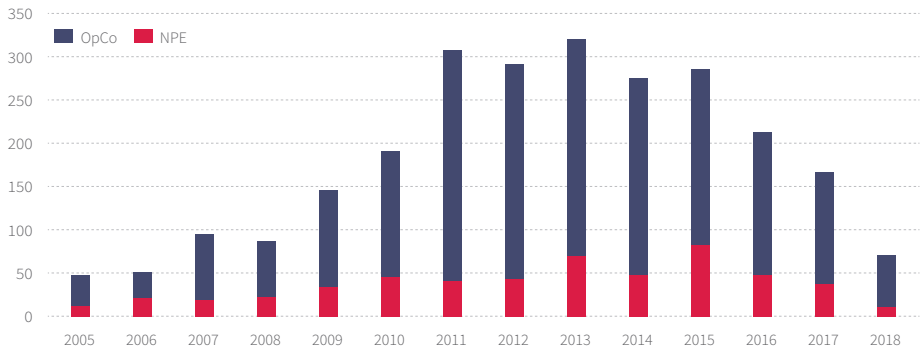
Chart 3 US vs Chinese tech companies: Cloud and AI



Litigation is not the main event

It is accepted wisdom that the technology sector is highly litigious. This may be to confuse two different issues. First, the undeniable fact that they were the number 1 target for NPEs. Chart 4 shows the levels of litigation reached in their heyday. Secondly, technology companies do not naturally use litigation as their preferred means of dispute resolution against other operating companies. This suggests that while patents will play an important role in everything from M&A to licensing, we should not expect a massive rise in litigation, but a greater awareness of the importance of patents.

Chart 4 US litigation against FAMGA and BAT



How to respond means understanding the question

This is the last in our series of reports on disruptive technologies, which we began from the perspective of sectors such as automotive, financial services, industrials and aerospace and defence that all were adapting to disruption. This Technology report ends with the suggestion that disruption is not one thing but many. Disruption by what? Disruption by who? Disruption from where? Cipher, our analytics platform that views these questions through a patent lens, is uniquely positioned to support the multi-discipliniary teams tasked with answering these questions.