PATENT INTELLIGENCE: INDUSTRIAL AUTOMATION

March 2019

The top 50 industrial automation companies own more than 350,000 active patent families and the costs of simply obtaining and maintaining these assets exceeds $1 billion per annum. As we sit at the dawn of the fourth industrial revolution (Industry 4.0), the most frequently asked question is *how many is enough?*

This is not an easy question, but as patent budgets come under increased scrutiny, it is often not an easy question to avoid. It is also not unique to this sector, and for this reason we explore the basic challenge and illustrate by reference to technologies from the Industry 4.0 domain.

TECHNOLOGY DISRUPTION

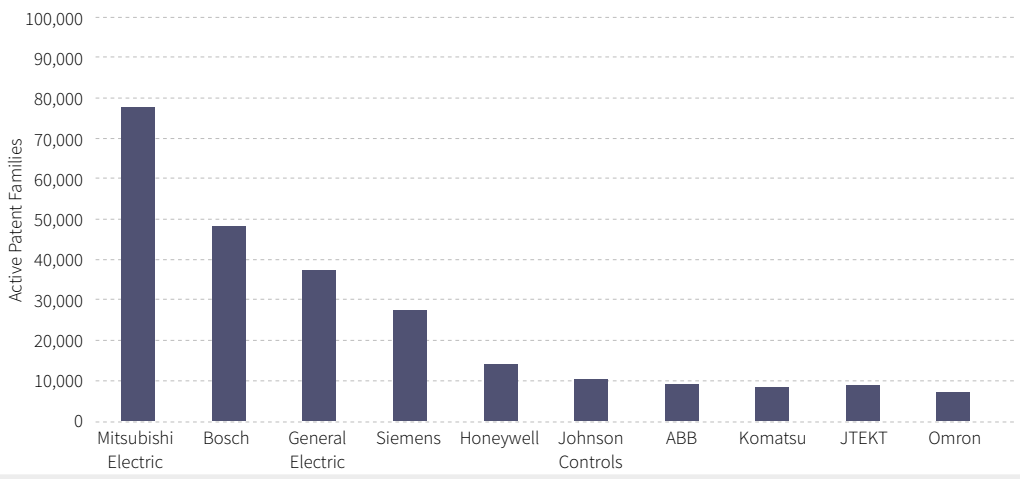
At times of epic disruption from technology, all sectors face the same systemic threat. Technologies that have been core to the sector's value proposition, change. Think internal combustion engines for cars. The consequences are always the same. The incumbents are placed under massive pressure to innovate, while technology companies reap the benefits of having invested ahead of the curve. The additional reality is that while the barriers to entry for capital intensive industries are huge, the game changes when the solution is rooted in technology - the reality exemplified by Uber, Spotify and Airbnb.

THE IDEAL PORTFOLIO

The consensus view is that the ideal patent portfolio would protect the future revenues of the business. In the simple case, where a company has 5% of the global market in a specific technology, the company should own 5% of the patents. Anything else would not adequately protect the company if approached by a competitor for a cross-licence and would not suitably deter new entrants from entering the arena.

Chart 1 shows the scale of the challenge for the Top 10 industrial automation companies. They are all heavily stocked in traditional technologies (such as building technologies, drives, and traction motors). While they are all investing heavily in new technologies (such as AI, robotics and automation), they all face the challenge of rebalancing in the years ahead.

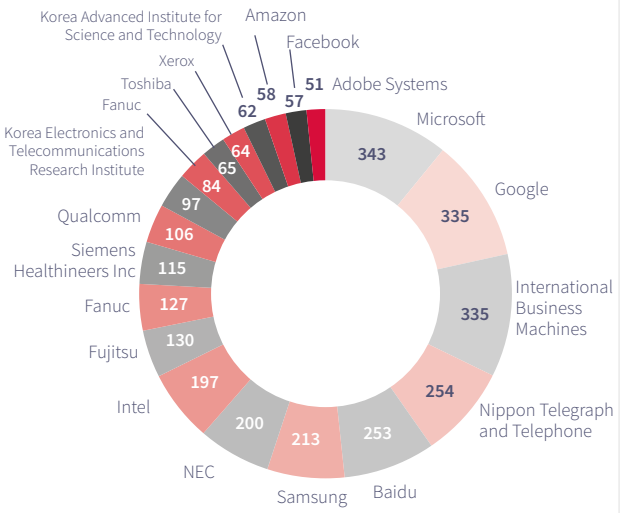
Chart 1: Top 10 owners of Industrial Automation portfolios



THE PROBLEM WITH PATENT LANDSCAPES

The common approaches to establishing who owns the patents relating to a specific technology are manual search or outsourcing. Each has its own problems. Conducting a search using conventional software welcomes you into the world of Boolean pain, where quality results are dependent on a manual struggle with keywords and patent office codes. Outsourcing involves the expense, delay and inconsistency that is familiar to all. The problem is that because the information required is so slow and expensive to extract, IP teams have only recently focussed their attention on the power of patent intelligence.

Chart 2: AI patents, Top 20 owners



THE PROMISE OF AI

Artificial Intelligence and machine learning technologies sit at the heart of automating everything from book recommendation engines to voice recognition to brain scans. Chart 2 represents the Top 20 owners of AI patents. Sure enough the US tech majors are well represented, as are their Chinese, Korean and Japanese competitors. What this chart does not communicate are the 1500+ other owners of AI patents.

"It is somewhat ironic in a universe of over 7,000 AI patents, the task of identification of them is commonly left to manual search." Steve Harris, CTO, Aistemos

This chart was generated automatically using a Cipher AI classifier.

3D PRINTING IS NOT ONE-DIMENSIONAL

3D printing tech has been around for many years, but there has been a massive increase in published patent applications over the last few years as shown in Chart 3. Automated patent intelligence eliminates the friction in analysing global trends or switching to an analysis of top owners, below in Chart 4.

Chart 3: Growth in 3D printing patents

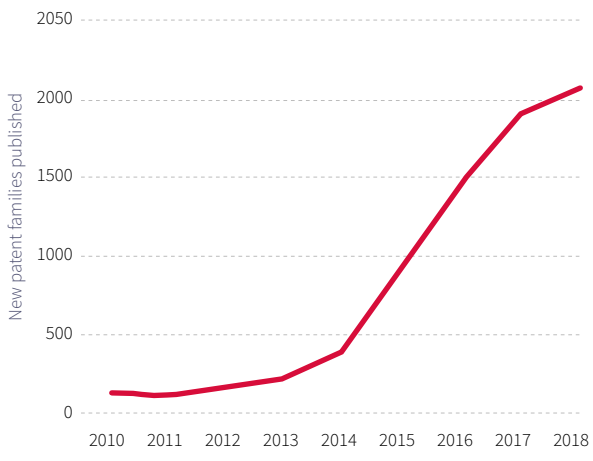
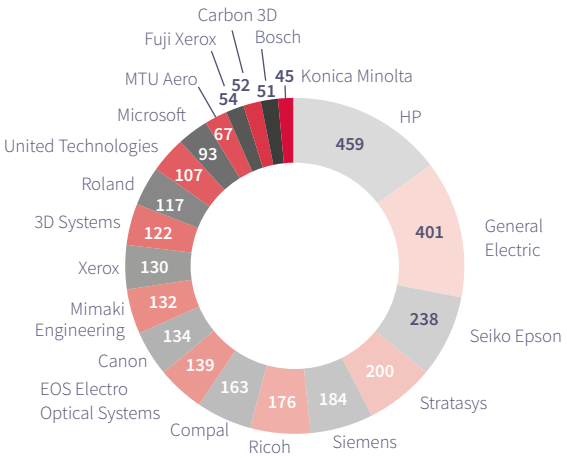


Chart 4: 3D Printing patents, Top 20 owners



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ROBOTICS REQUIRES PRECISION ENGINEERING

The answer to *who's doing what in robotics?* is unlikely to deliver actionable insight in most situations. Chart 5 is illustrative of the level of granularity required for most strategic IP decisions.

Chart 5: Robotics Landscape

	Fanuc	Kuka	Yaskawa Electric	ABB	Bosch	Nidec	Siemens	Mitsubishi Electric	Rockwell Automation	GE
Robot Arms	254	169	239	144	37	104	23	27	0	8
Sensor Fusion	88	38	31	29	40	4	7	24	0	6
Controllers	19	8	9	20	20	7	19	26	7	22
Human-Machine Interface (HMI)	1	4	0	17	9	0	36	1	60	9
EOAT	31	36	10	15	10	0	3	4	0	3
Swarming	32	27	29	27	1	1	10	4	0	1
ML/Learning Robots	113	0	5	3	2	1	0	1	0	0

So while a rough cut of the data suggests that Fanuc is the dominant owner of robotics patents, only with patent intelligence is the focus of Rockwell Automation in HMI revealed.

"Overall, the picture is clear. Industry 4.0 is not one thing but many. No one company will be able to dominate or control from an IP perspective. This means an era of greater collaboration. Patents will be an essential currency in many of those relationships." Nigel Swycher, CEO, Aistemos

For a fuller discussion of these topics, Nigel Swycher will be participating in the IP strategies for the fourth industrial revolution panel (day 1, 3.45pm) and the Growing role of data panel (day 2, 10.30am) or simply visit the Cipher stand.

CIPHER

PATENT INTELLIGENCE - TIME FOR ITS OWN REVOLUTION

Answering the question *how many patents is enough?* requires continuous alignment with your own corporate strategy and calibration to the activities of your competitors (and other owners of relevant patents).

The evidence suggests that the grit in the wheels is the current level of inefficiency in the methods of accessing the information critical to the decision making process.

The solution is automation - and we are delighted to use the occasion of IPBC Europe's focus on industrial automation to announce the development of the next Cipher industry taxonomy.

MORE ABOUT CIPHER PATENT INTELLIGENCE

Cipher is the first patent intelligence software using supervised machine learning to build classifiers that automatically map patents to defined technologies. Cipher has built industry taxonomies in a broad range of sectors including Automotive, Technology Products (in collaboration with AST) and Food, Beauty and Health (in partnership with Mintel).

Cipher has recently announced the development of its **INDUSTRIAL AUTOMATION** taxonomy, with the

- **Architecture**
- **Components and electronics**
- **Connectivity and IOT**
- **Control and Fluid Systems**
- **Infrastructure Communications**
- **Power and Drives**
- **Robotics**
- **Sensors and Monitoring**
- **Software and Analytics**
- **3D Printing**

To find out more about Cipher patent intelligence contact info@cipher.ai