


**Derwent
Top 100
Global
Innovators™
2020**



03	Foreword
05	Claiming the land
06	What we measure
10	Derwent Top 100 Global Innovators 2020
20	The delta from 2019
24	A constant presence
26	The first-time entrants
27	A tougher challenge
28	— The scale of ideas
28	— The fragmentation of innovation
29	— The need for others
30	— The space at the top

Foreword



Technology in this last decade has grown feverishly to touch every part of our daily life. We've become accustomed to carrying the internet in our pockets, sharing our thoughts with the world in an instant, changing the temperature in our home remotely, and feeling the bumps on the speedway as we race through a video game.

These technological advancements come from the ingenuity of men and women all over the world. Their innovative endeavors to improve the way we live our life fuel our progress forward. This is the spirit in which intellectual property flourishes and becomes the products of this decade, the next and beyond.

We are proud to be named a Derwent Global Top 100 Innovator for our work in haptics. We're excited to be a part of this select group of organizations that embrace the spirit of innovation.

At Immersion, we live by this same spirit of innovation. We are committed to developing haptic technologies that improve how people interact with their digital environment, making the digital world a better place to be.

Touch has the power to materially impact people's emotions, health, understanding and connection with others. The value of touch becomes more poignant as people increasingly experience more of their world through digital devices, applications and services. We are here to help bring touch to the digital world.

Haptic technology is a fast-changing field, and we believe that there is tremendous opportunity ahead of us. Our intellectual property is the work product of our dedication to haptic research and development, time and passion. More importantly, it is the starting place for our ability to build new products and solutions that enable our company to continue to grow.

Our congratulations to the Global Top 100 honorees, and thank you to Clarivate Analytics for your continued recognition of the importance of innovation.

**Ramzi Haidamus,
CEO of Immersion Corporation**

In the last year...

**In the
last year...**

145k

Inventions

10m

People

\$316bn

in Research

\$4.5tn

in Revenue

100

Innovators

Claiming the land

Doctors, by prolonging life.
Teachers, by multiplying knowledge in their students.
Farmers, by taking a seed and growing a crop.
Innovators, by conceiving ideas.

From nothing, they each create new value.

Like claiming land from the sea, innovators pluck new solutions from incomprehension.
They form them. They test them. They build on them.
And sometimes, they give them a life of their own.
They crystallize the value they create in a patent.

Innovation is profound, but convoluted and difficult.

The risk of an idea not being new or not working means that innovators take a chance.

With the world smaller, more often they encounter equally driven innovators in far-flung locations.

As the innovation ecosystem fragments, the number of competitors that give them pause constantly rises.

Increasingly, they add their knowledge to that of others as technologies become intertwined.

The sheer scale of ideas out there escalates.

Staying at the top is getting harder.

Yet some innovators embrace and meet the challenge.
They build a culture of generating new ideas, and a custom of casting them in patent form.

They claim the land.

They succeed in creating new value from ingenuity.

Introducing the Derwent Top 100 Global Innovators™ 2020 from Clarivate Analytics.

What we measure

From 14,000 organizations, we condense to the Top 100 Global Innovators.

1.

Volume

Our initial bar.

We assess every organization with more than 100 granted inventions in the last five years (and more than 500 filed in total) in the Derwent World Patents Index™.

2.

Influence

The level of downstream impact an invention has on later patent applications from others.

We measure the number of citations via the Derwent Patent Citations Index™ to a company or institution over the last five years, excluding citations from themselves.

3.

Success

Not every patent application submitted to a patent office proceeds to grant.

Reviewing the last five years, we measure the proportion that do.

Our data

Derwent World Patents Index™

A database of patents and patent applications from 60 patent-issuing states and authorities.

Always in English, and analyzed, re-written and cross-indexed by subject matter experts, DWPI summarizes inventions into what they are, what they are for and why they are needed. The Derwent editorial team process 3.5 million records per year.

Derwent Patents Citation Index™

A sister database to DWPI, DPCI focuses on inventions that have been referenced by applicants and patent examiners in following patent applications.

4.

Globalization

The level of investment of a patent applicant in their invention, as tracked via the expensive process of pursuing protection more globally.

We measure the proportion of inventions that were filed in all four of the key market patent offices of China, Europe, Japan and the United States.

Organized as a database of inventions, DPCI removes multiple citation events from and to “family” patents and patent applications, producing a true count of citation events, avoiding duplicates.

DPCI includes examiner and inventor citations from Australia, Austria, Belgium, European Patent Office, France, Japan, Luxembourg, Netherlands, Sweden, Switzerland, the U.K., the U.S. and WIPO.

Examiner-only citations are included from China, Czechia, Germany, South Korea, Malaysia, New Zealand, Norway, the Philippines, Russia, Singapore, South Africa and Spain.

100

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**Derwent
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Innovators
2020**

Derwent Top 100 Global Innovators 2020

At Clarivate, we believe that human ingenuity is the strongest force for improving the human condition.

Medical advances enable more fulfilled, more productive lives.

New ideas in energy and transport provide wider foundations for humanity to transition to a zero-carbon economy, reducing the constraints inherent in finite resources while conserving ecosystems and natural beauty.

Communication technology pushes the boundaries of art, culture and debate.

The impulse for scientists, engineers, coders and developers to perform the next experiment, to formulate the next hypothesis, is to make a difference.

Our analysis of the top of the global innovation ecosystem points to a tougher environment than ever before. Innovators are having to invest more, involve more people, review more data, watch more competitors and protect ideas more wisely. The need for clarity in innovation is urgent.

Our mission is to make their work easier and more often successful. Empowered by knowledge, they can *innovate with intelligence*.

The Derwent team at Clarivate has analyzed the Top 100 Global Innovators for nine years. This year we honor longstanding and perennial selectees and celebrate companies that have entered the Top 100 for the first time.

Hear from companies new to the Top 100

"At the heart of Immersion's innovation in haptics is a multi-disciplinary approach to making technology work for people. We apply science, research, and our technical know-how to building touch technology that makes digital interactions easier to use, more natural, and helpful. People all over the globe have embraced our technology – it is now in 3+ billion devices worldwide. As we grow adoption to the next billion devices, our intellectual property will continue to be fundamental to our ability to innovate and launch new products. In many ways, our commitment to creating technology that brings touch to the digital world has resulted in the growth of our IP. We are honored to be named a Derwent Top 100 Global Innovator for this commitment."

John Griffin
VP, Product and Marketing,
Immersion



"Innovation has always been one of the most important values that Tencent upholds, and it is a powerful driving force for Tencent's rapid development. Tencent pays close attention to intellectual property and actively improves the global patent layout. Our patent applications are in multiple areas such as instant messaging, network security, gaming, artificial intelligence, cloud computing, etc., which has set up an intellectual property protection system from different perspectives. In the future, Tencent will continue to follow our passion for innovation, strengthening intellectual property protection to further drive the company's development."

Sam Xu
Vice President of Tencent/Head of IP,
Tencent



"Innovation is an important part of Microchip's culture and a contributor to the success of our broad offering of products. Microchip developed the first electrically erasable microcontroller and flash microcontroller and continues to have an impact in flash memory products. Microchip IP is used in approximately 30% of all MCUs in our industry, through licensing, and we continue to innovate by developing non-volatile memory solutions in advanced technology nodes. We are also a leader in embedded security and a key player in secure products for Internet of Things. Through internal development and strategic acquisitions, Microchip continues to expand our innovative products into key markets including 5G, IoT, datacenters, electrification of vehicles, artificial intelligence and autonomous driving."

Ganesh Moorthy
President and Chief Operating Officer,
Microchip Technology Inc.



"We are developing new products and creating new businesses by strengthening the four core technology foundations, 'optical,' 'wireless,' 'electronic components' and 'electric wires / cables,' which support 'Tsunagu' (the connecting) technology and by incorporating open innovation actively to expand technology. We're very honored to have been selected as a Derwent Top 100 Global Innovator, which acclaims the results of our intellectual property activities that support this activity."

Mr. Akira Wada
Executive Vice President for R&D,
Fujikura



Derwent Top 100 Global Innovators 2020

(Alphabetical)

Innovator	Country/Region	Industry	Recognition* (2012–20)					Recipient highlights
3M	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
ABB	Switzerland	Manufacturing and medical	2012	2014	2015	2020		
Abbott	United States	Pharmaceuticals	2014 2020	2015	2016	2017	2018	
AGC	Japan	Chemicals and cosmetics	2014	2015	2018	2019	2020	
Aisin Seiki	Japan	Automotive	2015 2020	2016	2017	2018	2019	
Alstom	France	Manufacturing and medical	2016	2017	2018	2019	2020	
Amazon	United States	Software	2016	2017	2018	2019	2020	
AMD	United States	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Analog Devices	United States	Hardware and electronics	2012 2018	2013 2019	2014 2020	2016	2017	
Apple	United States	Telecommunications	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
AT&T	United States	Telecommunications	2013	2014	2015	2020		
BASF	Germany	Chemicals and cosmetics	2012 2019	2015 2020	2016	2017	2018	
Bayer	Germany	Pharmaceuticals	2012 2020	2016	2017	2018	2019	
BD	United States	Manufacturing and medical	2016	2017	2018	2019	2020	
Blackberry	Canada	Telecommunications	2014	2015	2016	2020		
Boeing	United States	Aerospace and defense	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Boston Scientific	United States	Manufacturing and medical	2017	2018	2019	2020		
Casio Computer	Japan	Hardware and electronics	2015	2016	2018	2020		
Cisco	United States	Hardware and electronics	2019	2020				
Commissariat à l'Energie Atomique	France	Institution and government research	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Corning	United States	Hardware and electronics	2012 2019	2013 2020	2014	2015	2017	
Daikin Industries	Japan	Manufacturing and medical	2012 2019	2015 2020	2016	2017	2018	
Dolby Laboratories	United States	Hardware and electronics	2017	2018	2019	2020		
Dow¹	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
DuPont²	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time

* For consistency, recognitions are identified by date of report publication, not of analysis.

¹ Dow is a new materials science company created on June 1 2019, after the separation of DowDupont into Dow Inc, Corteva Inc and Dupont de Nemours Inc. For the purposes of this report, Dow Inc has assumed the portfolio of "Historical Dow."

² Dupont is a new specialty products company created on June 1 2019, after the separation of DowDupont into Dow Inc, Corteva Inc and Dupont de Nemours Inc. For the purposes of this report, Dupont de Nemours Inc has assumed the portfolio of "Historical Dupont."

Innovator	Country/Region	Industry	Recognition (2012–20)					Recipient highlights
Eaton	United States	Hardware and electronics	2012	2013	2014	2020		
Emerson	United States	Hardware and electronics	2012	2013	2014	2015	2016	9th time
Ericsson	Sweden	Telecommunications	2012	2013	2014	2015	2016	9th time
Facebook	United States	Software	2018	2020				
Foxconn Technology Group	Taiwan	Hardware and electronics	2018	2019	2020			
Fraunhofer-Gesellschaft	Germany	Institution and government research	2014	2015	2016	2017	2018	
FujiFilm	Japan	Hardware and electronics	2013	2014	2015	2016	2017	
Fujikura	Japan	Hardware and electronics	2020					1st time
Fujitsu	Japan	Hardware and electronics	2012	2013	2014	2015	2016	9th time
Furukawa Electric	Japan	Hardware and electronics	2015	2016	2018	2019	2020	
GE	United States	Household goods	2012	2013	2014	2015	2016	9th time
Google	United States	Software	2013	2014	2015	2016	2017	
Hitachi	Japan	Hardware and electronics	2012	2013	2014	2015	2016	9th time
Honda	Japan	Automotive	2012	2013	2014	2015	2016	9th time
Honeywell	United States	Hardware and electronics	2012	2013	2014	2015	2016	9th time
HP	United States	Hardware and electronics	2012	2013	2014	2015	2020	
HTC	Taiwan	Telecommunications	2020					1st time
Huawei	China, Mainland	Telecommunications	2015	2017	2018	2019	2020	
Immersion	United States	Hardware and electronics	2020					1st time
Intel	United States	Hardware and electronics	2012	2013	2014	2015	2016	9th time
ITRI	Taiwan	Institution and government research	2015	2018	2019	2020		
Japan Aviation Electronics	Japan	Aerospace and defense	2012	2019	2020			
JFE Steel	Japan	Manufacturing and medical	2019	2020				
Johnson & Johnson	United States	Pharmaceuticals	2014	2015	2016	2017	2018	
Johnson Controls	Ireland	Manufacturing and medical	2016	2017	2018	2019	2020	
Kaspersky Lab	Russia	Software	2019	2020				
Kawasaki Heavy Industries	Japan	Manufacturing and medical	2016	2017	2018	2019	2020	

Innovator	Country/Region	Industry	Recognition (2012–20)					Recipient highlights
Kobe Steel	Japan	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
Komatsu	Japan	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
LG Electronics	South Korea	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
LSIS	South Korea	Oil, gas and energy	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Medtronic	United States	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
Merck	Germany	Pharmaceuticals	2017	2018	2020			
Microchip Technology	United States	Hardware and electronics	2020					1st time
Micron Technology	United States	Hardware and electronics	2013 2018	2014 2019	2015 2020	2016	2017	
Microsoft	United States	Software	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Mitsubishi Electric	Japan	Hardware and electronics	2012 2018	2013 2019	2014 2020	2015	2016	
Mitsubishi Heavy Industries	Japan	Manufacturing and medical	2013 2018	2014 2019	2015 2020	2016	2017	
NEC	Japan	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Nichia	Japan	Chemicals and cosmetics	2018	2019	2020			
Nike	United States	Household goods	2013 2018	2014 2019	2015 2020	2016	2017	
Nippon Steel Corporation	Japan	Manufacturing and medical	2013 2018	2014 2019	2015 2020	2016	2017	
Nissan Motor	Japan	Automotive	2014 2019	2015 2020	2016	2017	2018	
Nokia	Finland	Telecommunications	2017	2018	2019	2020		
Novartis	Switzerland	Pharmaceuticals	2015 2020	2016	2017	2018	2019	
NTT	Japan	Telecommunications	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
NXP Semiconductors	Netherlands	Hardware and electronics	2017	2018	2019	2020		
Olympus	Japan	Manufacturing and medical	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Omron	Japan	Hardware and electronics	2014	2017	2018	2019	2020	
Oracle	United States	Software	2014 2019	2015 2020	2016	2017	2018	
Panasonic	Japan	Household goods	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time

Innovator	Country/Region	Industry	Recognition (2012–20)					Recipient highlights
Qualcomm	United States	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Quanta Computer	Taiwan	Hardware and electronics	2019	2020				
Raytheon	United States	Aerospace and defense	2012	2013	2019	2020		
Renesas Electronics	Japan	Hardware and electronics	2017	2018	2019	2020		
Roche	Switzerland	Pharmaceuticals	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Royal Philips	Netherlands	Hardware and electronics	2012 2018	2014 2019	2015 2020	2016	2017	
Saint-Gobain	France	Manufacturing and medical	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Samsung Electronics	South Korea	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Schneider Electric	France	Hardware and electronics	2020					1st time
Shin-Etsu Chemical	Japan	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Sony	Japan	Household goods	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Symantec	United States	Software	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
TDK	Japan	Hardware and electronics	2013 2020	2014	2015	2018	2019	
TE Connectivity	United States	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Tencent	China, Mainland	Software	2020					1st time
Texas Instruments	United States	Hardware and electronics	2013 2020	2014	2015	2018	2019	
Thales	France	Aerospace and defense	2013 2019	2014 2020	2016	2017	2018	
Toshiba	Japan	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Toyota	Japan	Automotive	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
University of California	United States	Institution and government research	2017	2020				
Xerox	United States	Hardware and electronics	2012 2018	2013 2019	2014 2020	2015	2017	
Xiaomi	China, Mainland	Hardware and electronics	2019	2020				
Xilinx	United States	Hardware and electronics	2013 2018	2014 2019	2015 2020	2016	2017	
Yaskawa Electric	Japan	Manufacturing and medical	2016	2017	2018	2019	2020	

Derwent Top 100 Global Innovators 2020

(Industry)

Innovator	Country/Region	Industry	Recognition (2012–20)					Recipient highlights
Boeing	United States	Aerospace and defense	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Japan Aviation Electronics	Japan	Aerospace and defense	2012	2019	2020			
Raytheon	United States	Aerospace and defense	2012	2013	2019	2020		
Thales	France	Aerospace and defense	2013 2019	2014 2020	2016	2017	2018	
Aisin Seiki	Japan	Automotive	2015 2020	2016	2017	2018	2019	
Honda	Japan	Automotive	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Nissan Motor	Japan	Automotive	2014 2019	2015 2020	2016	2017	2018	
Toyota	Japan	Automotive	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
3M	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
AGC	Japan	Chemicals and cosmetics	2014	2015	2018	2019	2020	
BASF	Germany	Chemicals and cosmetics	2012 2019	2015 2020	2016	2017	2018	
Dow	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
DuPont	United States	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Nichia	Japan	Chemicals and cosmetics	2018	2019	2020			
Shin-Etsu Chemical	Japan	Chemicals and cosmetics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
AMD	United States	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Analog Devices	United States	Hardware and electronics	2012 2018	2013 2019	2014 2020	2016	2017	
Casio Computer	Japan	Hardware and electronics	2015	2016	2018	2020		
Cisco	United States	Hardware and electronics	2019	2020				
Corning	United States	Hardware and electronics	2012 2019	2013 2020	2014	2015	2017	
Dolby Laboratories	United States	Hardware and electronics	2017	2018	2019	2020		
Eaton	United States	Hardware and electronics	2012	2013	2014	2020		
Emerson	United States	Hardware and electronics	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Foxconn Technology Group	Taiwan	Hardware and electronics	2018	2019	2020			
FujiFilm	Japan	Hardware and electronics	2013 2018	2014 2019	2015 2020	2016	2017	

Innovator	Country/Region	Industry	Recognition (2012–20)	Recipient highlights
Fujikura	Japan	Hardware and electronics	2020	1st time
Fujitsu	Japan	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
Furukawa Electric	Japan	Hardware and electronics	2015 2016 2018 2019 2020	
Hitachi	Japan	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
Honeywell	United States	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
HP	United States	Hardware and electronics	2012 2013 2014 2015 2020	
Immersion	United States	Hardware and electronics	2020	1st time
Intel	United States	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
LG Electronics	South Korea	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
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Mitsubishi Electric	Japan	Hardware and electronics	2012 2013 2014 2015 2016 2018 2019 2020	
NEC	Japan	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
NXP Semiconductors	Netherlands	Hardware and electronics	2017 2018 2019 2020	
Omron	Japan	Hardware and electronics	2014 2017 2018 2019 2020	
Qualcomm	United States	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
Quanta Computer	Taiwan	Hardware and electronics	2019 2020	
Renesas Electronics	Japan	Hardware and electronics	2017 2018 2019 2020	
Royal Philips	Netherlands	Hardware and electronics	2012 2014 2015 2016 2017 2018 2019 2020	
Samsung Electronics	South Korea	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
Schneider Electric	France	Hardware and electronics	2020	1st time
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TE Connectivity	United States	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time
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Toshiba	Japan	Hardware and electronics	2012 2013 2014 2015 2016 2017 2018 2019 2020	9th time

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Xiaomi	China, Mainland	Hardware and electronics	2019	2020				
Xilinx	United States	Hardware and electronics	2013 2018	2014 2019	2015 2020	2016	2017	
GE	United States	Household goods	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Nike	United States	Household goods	2013 2018	2014 2019	2015 2020	2016	2017	
Panasonic	Japan	Household goods	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Sony	Japan	Household goods	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Commissariat à l'Énergie Atomique	France	Institution and government research	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Fraunhofer-Gesellschaft	Germany	Institution and government research	2014 2019	2015 2020	2016	2017	2018	
ITRI	Taiwan	Institution and government research	2015	2018	2019	2020		
University of California	United States	Institution and government research	2017	2020				
ABB	Switzerland	Manufacturing and medical	2012	2014	2015	2020		
Alstom	France	Manufacturing and medical	2016	2017	2018	2019	2020	
BD	United States	Manufacturing and medical	2016	2017	2018	2019	2020	
Boston Scientific	United States	Manufacturing and medical	2017	2018	2019	2020		
Daikin Industries	Japan	Manufacturing and medical	2012 2019	2015 2020	2016	2017	2018	
JFE Steel	Japan	Manufacturing and medical	2019	2020				
Johnson Controls	Ireland	Manufacturing and medical	2016	2017	2018	2019	2020	
Kawasaki Heavy Industries	Japan	Manufacturing and medical	2016	2017	2018	2019	2020	
Kobe Steel	Japan	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
Komatsu	Japan	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
Medtronic	United States	Manufacturing and medical	2015 2020	2016	2017	2018	2019	
Mitsubishi Heavy Industries	Japan	Manufacturing and medical	2013 2018	2014 2019	2015 2020	2016	2017	
Nippon Steel Corporation	Japan	Manufacturing and medical	2013 2018	2014 2019	2015 2020	2016	2017	
Olympus	Japan	Manufacturing and medical	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time

Innovator	Country/Region	Industry	Recognition (2012–20)					Recipient highlights
Saint-Gobain	France	Manufacturing and medical	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Yaskawa Electric	Japan	Manufacturing and medical	2016	2017	2018	2019	2020	
LSIS	South Korea	Oil, gas and energy	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Abbott	United States	Pharmaceuticals	2014 2020	2015	2016	2017	2018	
Bayer	Germany	Pharmaceuticals	2012 2020	2016	2017	2018	2019	
Johnson & Johnson	United States	Pharmaceuticals	2014 2019	2015 2020	2016	2017	2018	
Merck	Germany	Pharmaceuticals	2017	2018	2020			
Novartis	Switzerland	Pharmaceuticals	2015 2020	2016	2017	2018	2019	
Roche	Switzerland	Pharmaceuticals	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Amazon	United States	Software	2016	2017	2018	2019	2020	
Facebook	United States	Software	2018	2020				
Google	United States	Software	2013 2018	2014 2019	2015 2020	2016	2017	
Kaspersky Lab	Russia	Software	2019	2020				
Microsoft	United States	Software	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Oracle	United States	Software	2014 2019	2015 2020	2016	2017	2018	
Symantec	United States	Software	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
Tencent	China, Mainland	Software	2020					1st time
Apple	United States	Telecommunications	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
AT&T	United States	Telecommunications	2013	2014	2015	2020		
Blackberry	Canada	Telecommunications	2014	2015	2016	2020		
Ericsson	Sweden	Telecommunications	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time
HTC	Taiwan	Telecommunications	2020					1st time
Huawei	China, Mainland	Telecommunications	2015	2017	2018	2019	2020	
Nokia	Finland	Telecommunications	2017	2018	2019	2020		
NTT	Japan	Telecommunications	2012 2017	2013 2018	2014 2019	2015 2020	2016	9th time

The delta from 2019

The measurement of the Derwent Top 100 Global Innovators occurs every year, but the metrics we use look at three-to-five year rolling windows of activity. Rapid, dramatic change in the make-up and structure of the Top 100 should not be expected.

It is also true that a list limited to 100 entries is zero-sum. Inclusion of a new company or institution will cause the exclusion of another. Innovation is not so selective; all contribution adds to the global economy and society.

The 2020 Top 100 saw 84 innovators maintain their status. Six innovators joined for the first time and 10 re-joined the Top 100, having been included in past years.

Geographic change from 2019 and 2020 is primarily an increase in American firms, and corresponding decrease in Japanese firms. Japan and the United States together represent 71 of the 100, which results in higher levels of disturbance year over year. The U.S. increase reverses a decline in 2019.

France, despite a reduction in representation, maintains its lead among European nations.

Ireland has gained a foothold in the Top 100 after the operational headquarters move of Johnson Controls to Cork, and Canada regains a mention through the re-entry of telecommunications firm BlackBerry, for the first time since 2016.

Taiwan increased from three to four innovators in the Top 100 through the entry of HTC.

The breakthrough of multiple Mainland Chinese firms into the Top 100 that occurred in 2019 has been preserved in 2020, through the inclusion of Tencent for the first time. We predict the entry of Chinese research institutions in the next few years, as the widely observed shift from pure volumetric patent filing to selectivity and impact yields results.

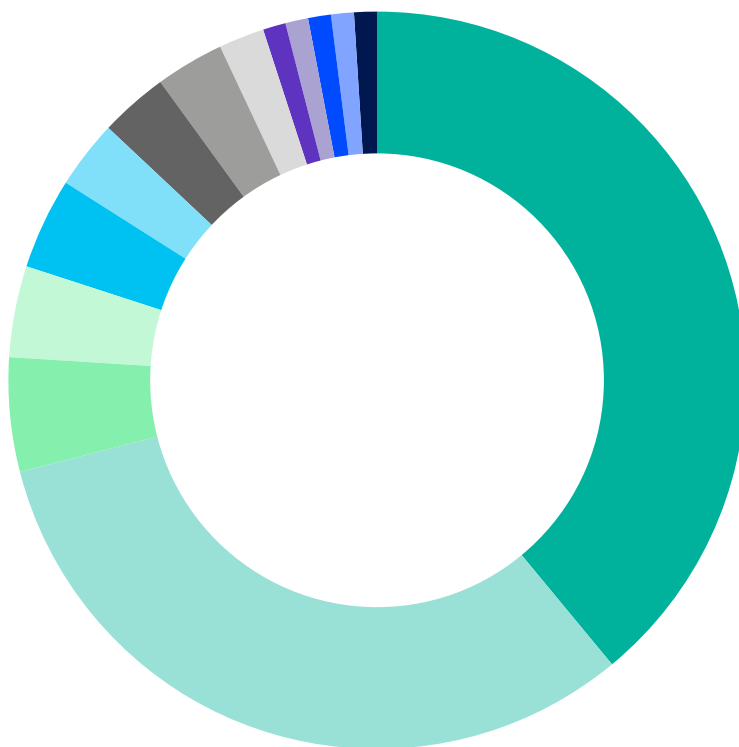
Within industrial categories there is general movement towards innovators in the tech sectors, such as electronics, software and telecommunications.

Heavy-engineering and chemical companies have suffered lower levels of representation this year. In the chemical and cosmetics category, this continues a trend from 2019.

Pharmaceutical firms have increased from four to six entries, through the re-inclusion of Abbott and Merck.

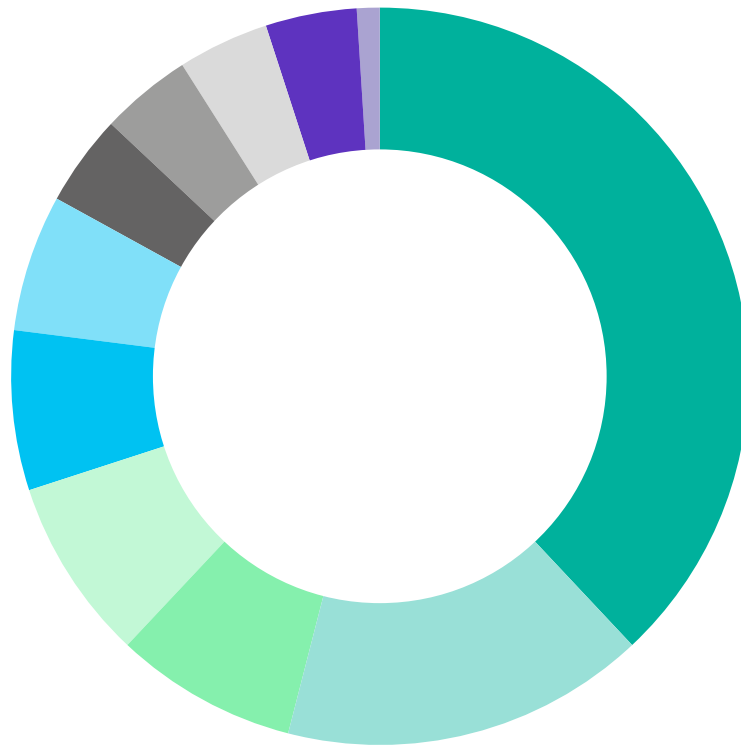
The manufacturing sector also gained a further place in the Top 100, with the re-inclusion of Swiss high-tech manufacturing firm ABB.

Geographic distribution



39%	U.S.	+6
32%	Japan	-7
5%	France	-2
4%	Germany	No change
4%	Taiwan	+1
3%	South Korea	No change
3%	China, Mainland	No change
3%	Switzerland	No change
2%	Netherlands	No change
1%	Finland	No change
1%	Ireland	+1
1%	Russia	No change
1%	Sweden	No change
1%	Canada	+1

Industry distribution



38%	Hardware and electronics	+3
16%	Manufacturing and medical	+1
8%	Software	+2
8%	Telecoms	+3
7%	Chemicals and cosmetics	-3
6%	Pharmaceuticals	+2
4%	Automotive	-3
4%	Aerospace and defense	-2
4%	Household goods	-2
4%	Institution and government research	+1
1%	Oil, gas and energy	-2

A constant presence

Thirty-one companies and one research institution have been included in the Derwent Top 100 Global Innovators list every year since its inception.

These organizations generate \$2.2 trillion in annual sales per year. On average, they have been operating for over a century with the oldest founded in the 17th century. They have seen markets ebb and flow, new technologies quickly rise and rapidly become obsolete while witnessing dramatic societal change. But the spark of innovation still burns brightly.

They re-invented. They evolved. They kept up. They created entire industries. And they continue to lead.

Nine-time Derwent Top 100 Global Innovators	Country or region	Industry
3M	United States	Chemicals and cosmetics
AMD	United States	Hardware and electronics
Apple	United States	Telecommunications
Boeing	United States	Aerospace and defense
Commissariat à l'Energie Atomique	France	Institution & government research
Dow	United States	Chemicals and cosmetics
DuPont	United States	Chemicals and cosmetics
Emerson	United States	Hardware and electronics
Ericsson	Sweden	Telecommunications
Fujitsu	Japan	Hardware and electronics
GE	United States	Household goods
Hitachi	Japan	Hardware and electronics
Honda	Japan	Automotive
Honeywell	United States	Hardware and electronics
Intel	United States	Hardware and electronics
LG Electronics	South Korea	Hardware and electronics
LSIS	South Korea	Oil, gas & energy
Microsoft	United States	Software
NEC	Japan	Hardware and electronics
NTT	Japan	Telecommunications
Olympus	Japan	Manufacturing and medical
Panasonic	Japan	Household goods
Qualcomm	United States	Hardware and electronics
Roche	Switzerland	Pharmaceuticals
Saint-Gobain	France	Manufacturing and medical
Samsung Electronics	South Korea	Hardware and electronics
Shin-Etsu Chemical	Japan	Chemicals and cosmetics
Sony	Japan	Household goods
Symantec	United States	Software
TE Connectivity	United States	Hardware and electronics
Toshiba	Japan	Hardware and electronics
Toyota	Japan	Automotive

The first-time entrants

Six companies join the Derwent Top 100 Global Innovators in 2020 for the first time.

While representing a diverse range of industries, they have in common creativity and leading technical change.

Our new entrants have on average risen 250 places in our rankings since 2015, following a trajectory of refining excellence and investment in research and intellectual property formulation.

It isn't accidental. Eminence and quality come from focus, expertise and hard work. Welcome to the top.

First-time Top 100 Global Innovators

First-time Derwent Top 100 Global Innovators	Country or region	Industry
Fujikura	Japan	Hardware and electronics
HTC	Taiwan	Telecommunications
Immersion	United States	Hardware and electronics
Microchip Technology	United States	Hardware and electronics
Schneider Electric	France	Hardware and electronics
Tencent	China, Mainland	Software

A tougher challenge

Ideation is never easy. Problem solving for a living is a process of expertise and ingenuity targeted to well-placed bets.

The chances of failure are high – so high that it is expected as part of the knowledge-creation process. But the dynamics of successful ideation are evolving. There are more pitfalls out there to navigate, and they are more difficult to avoid. The nature of the technical challenge is now different.

In response, the innovation ecosystem is changing.

Globally, there have never been so many ideas filed at patent offices, with 6.4 million patent documents published last year compared to 5.7 million the year before, a 12% increase.

Competition between innovators is more intense and harder to track.

As technologies converge, base science and engineering disciplines are more often combined, meaning that multiple layers of expertise are more often required.

The way innovators protect new ideas is also changing, requiring more thought and wisdom.

The scale of ideas

With more people graduating with science, engineering and technology degrees than ever before, the availability of technical knowledge resources across the world has increased.³

More scientists and engineers mean more solved problems, more ideas, more value. That is cause for significant optimism. As the technical challenges we face rapidly increase, as a society we are generating more of the expertise that will be required to meet those challenges.

It also means that the scale of new ideas in the world is increasing rapidly.

For humanity, this is of huge benefit. For the individual corporation, it means higher risk.

It means that the odds of not being first are greater. It means that the chances of inadvertently using the technology protected by another are increased. It means an escalated danger that a better solution than yours is out there.

Number of inventions by year added to DWPI

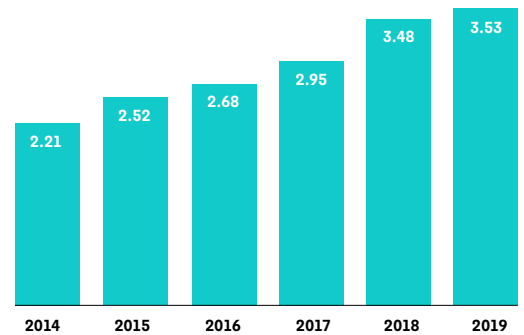


Figure 1 Number of inventions (DWPI Patent Families) added to the database each year. Data complete as of January 31, 2020.

The fragmentation of innovation

As part of the Derwent Top 100 Global Innovators program, we analyze the activity at the top of the innovation ecosystem. Our analysis extends well beyond the Top 100.

For the first time, in 2020 we delve into the archive to look at how much of total patented innovation emanates from the candidates for the Top 100.

The story the data tells is insightful, with the market share of the Top 1,000 rapidly diminishing. Just six years ago, over a quarter of all inventions came from the Top 1,000. Today it has decreased to 18%.

The increasing pace of global patent activity is not seen in the activity of the Top 1,000. This is partially the effect of the rising tide of wider global ideation – the Top 1,000 is a restricted list, global innovation is not.

Number of inventions by year added to DWPI

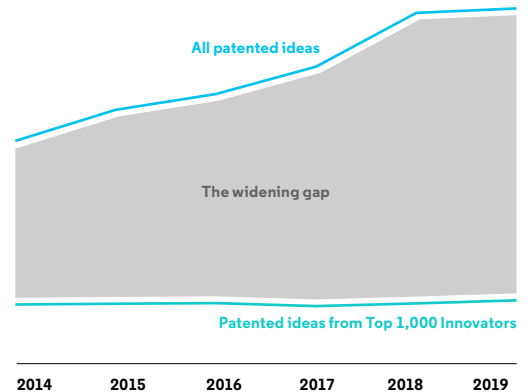


Figure 2 Number of new inventions in DWPI from the Top 1,000 entities as ranked each year for the Derwent Top 100 Global Innovators program, and in total, from any patent applicant. Data complete as of January 31, 2020.

³ Tooze, J. (2018, February 8). STEM student numbers on the rise [Blog post]. Retrieved from <http://www.sciencecampaign.org.uk/news-media/case-comment/stem-student-numbers-on-the-rise.html>

Wright, J. (2017, September 1). STEM Majors Are Accelerating in Every State, Just as Humanities Degrees Are Declining [Blog post]. Retrieved from <https://www.economicmodeling.com/2017/09/01/stem-majors-accelerating-every-state-just-humanities-degrees-declining/>

The impact on leading global innovators is one of increasing fragmentation. More innovation is coming from smaller organizations than bigger ones, leading to the challenge of not knowing where to look, what to track or who to monitor.

The fragmentation trend underscores the need to collaborate and work across boundaries, and encourages big firms to explore non-traditional partnerships.

Innovation market share of Top 1,000 (in %)

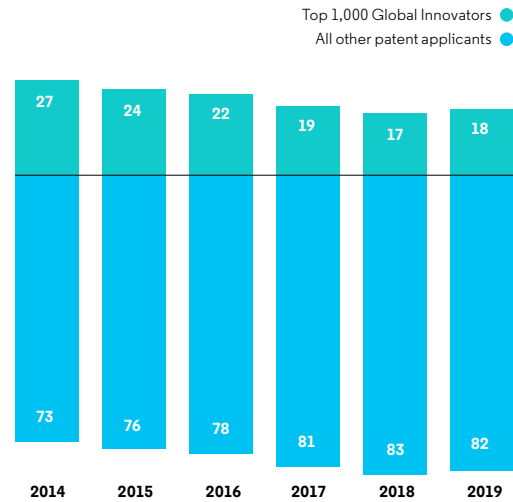


Figure 3 Proportion of new inventions added to DWPI each year from the Top 1,000 entities as ranked each year for the Derwent Top 100 Global Innovators program, and all other patent applicants; essentially, a view of market share in ideas.

The need for others

A natural effect of technical development is complexity and drift.

Over time, technology has a tendency to cross the educational boundaries of mechanics, electronics, chemistry, computer science, physiology, information theory, fluid dynamics, manufacturing engineering...

Take an example current to today – the electric vehicle. To work (and sell), it needs to incorporate solutions involving powertrain engineering, suspension geometry, weight distribution, battery technology, power distribution, motor control topology, human-machine interaction, automation and hundreds of others.

Look anywhere – phones, medical devices, manufacturing, energy production – and you will see a need for deeper expertise, working together.

We see this effect in a simple metric – how many inventors? In six years of Derwent

Top 100 Global Innovator data, the average number of listed inventors per patent record on DWPI data has risen 5.3%.

Each invention is becoming more knowledge intense, requiring slightly more ingenuity than the year before.

The challenge is one of providing opportunity for the collaboration to occur, and the management techniques required to prevent separation and cloistering of expertise.

Inventors per invention Derwent Top 100 Global Innovators

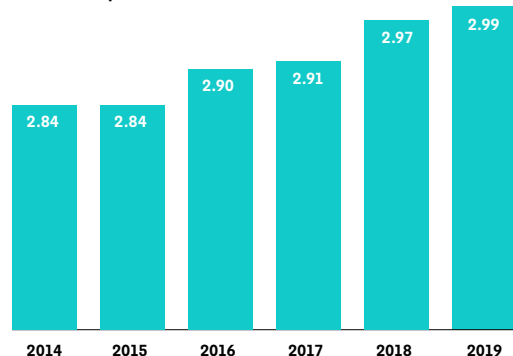


Figure 4 Average number of listed inventors per invention by year added to DWPI. Data complete as of January 31, 2020.

The space at the top

Competition for inclusion in the Derwent Top 100 Global Innovators is itself getting more difficult.

Over time we have noticed that the threshold score needed to make it into the Top 100 has been increasing each year. The scores used to identify the Top 100 are constantly beyond those for previous Top 100 alumni.

The space at the very top of the innovation ecosystem is getting tight.

Threshold for inclusion in the Top 100, normalized

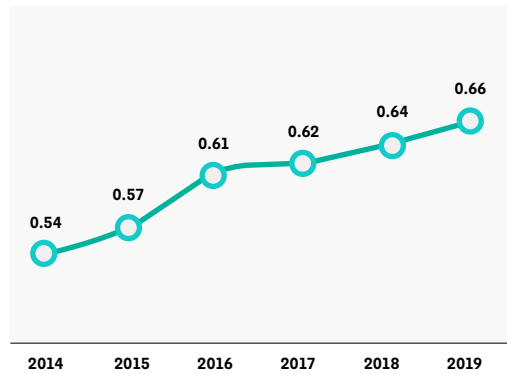


Figure 5 Threshold normalized score required for inclusion in the Derwent Top 100 Global Innovators ranking.

The compression is coming from significant rises in the Influence and Success measures, even as the Volume of patent activity for the Top 100 has gone down and filing breadth has reduced. The best are getting better at securing patent protection for their ideas, which are then also having more impact down the line. This is the clearest signal yet that inherent invention quality is more important than sheer quantity.

It is no longer a matter of numerical volume. Our Top 100 speaks to a changing ecosystem where success is driven by selectivity.

% change in Top 100 entry thresholds, minima

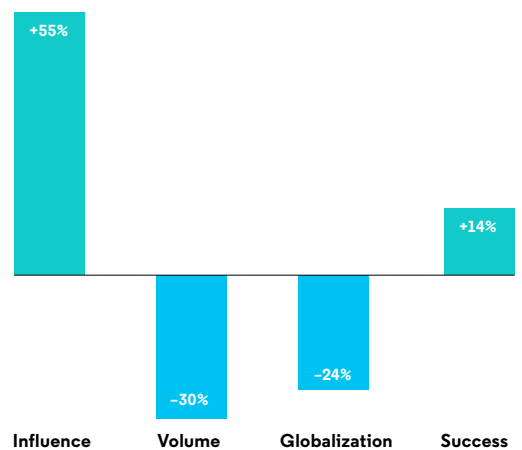


Figure 6 Percentage change in base metrics for inclusion in the Derwent Top 100 Global Innovators list; based on minimum measurements observed in the data, compared between 2015 and 2020 measurement periods.

Innovate with Intelligence.

Our purpose at Derwent is to empower and enlighten innovators, to create perception and understanding, to build on the ideas of the world.

For our Derwent Top 100 Global Innovators, and those on the pathway to the Top 100, it is more challenging than ever before.

They are working harder, smarter and investing more collaboratively and with greater judgment.

The breadth and complexity of the innovation ecosystem has never been greater, the need for clarity never so acute.



About Clarivate Analytics

Clarivate Analytics™ is a global leader in providing trusted insights and analytics to accelerate the pace of innovation. We have built some of the most trusted brands across the innovation lifecycle, including the Web of Science™, Cortellis™, Derwent™, CompuMark™, MarkMonitor™ and Techstreet™. Today, Clarivate Analytics is on a bold entrepreneurial mission to help customers reduce the time from new ideas to life-changing innovations. For more information, please visit clarivate.com.



About Derwent

Derwent™, a Clarivate Analytics company, powers the innovation lifecycle from idea to commercialization – with trusted patent data, applications and services including Derwent Innovation™, Derwent World Patents Index™, Derwent Patents Citation Index™ and Derwent Data Analyzer™. We build solutions for inventors, patent attorneys and licensing specialists at start-ups and the largest global innovators, legal professionals at the leading intellectual property practices, and patent examiners at more than 40 patent offices. Our solutions are used to monitor technology trends and competitive landscapes, inform freedom to operate opinions, prosecute patents, monetize and license assets and support litigation activities. For more information, please visit derwent.com.

