

## **IBM Tops U.S. Patent List for 28th Consecutive Year with Innovations in Artificial Intelligence, Hybrid Cloud, Quantum Computing and Cyber-Security**

### **More Than Quarter Century of Patent Leadership Demonstrates IBM's Long-Term Commitment to a Culture of Scientific Discovery and Innovation**

ARMONK, N.Y., Jan. 12, 2021 /[PRNewswire](#)/ -- IBM (NYSE: IBM) scientists and researchers received 9,130 U.S. patents in 2020, the most of any company, marking 28 consecutive years of IBM patent leadership. IBM led the industry in the number of artificial intelligence (AI), cloud, quantum computing and security-related patents granted.

"The world needs scientific thinking and action more than ever," Darío Gil, SVP and Director of IBM Research

"The world needs scientific thinking and action more than ever. IBM's sustained commitment to investing in research and development, both in good and in challenging times, has paved the way for new products and new frontiers of information technology that have greatly benefited our clients and society," said Darío Gil, Senior Vice President and Director of IBM Research. "The culture of

innovation at IBM is stronger than ever, thanks to our inventors worldwide who devote themselves to advancing the boundaries of knowledge in their respective fields every single day."

IBM led the industry in the number of U.S. patents across key technology fields:

#### **• Making AI More Intuitive**

- IBM received more than 2,300 AI patents as inventors developed new AI technologies to help businesses scale their use of AI. Patents in this area ranged from technology to make virtual agents more responsive to emotions when speaking to customers, to AI that can help people make difficult decisions -- summarizing key decision points from a variety of information sources, both written and verbal, and presenting them in easy-to-understand visualizations. IBM is focused on delivering innovations in natural language processing, automation and building trust in AI, and continually infusing new capabilities from IBM Research into our IBM Watson products. In 2020, this included the IBM Watson team announcing the first commercialization of capabilities from [Project Debater](#) - a technology that digests massive amounts of text and constructs a well-structured speech on a given topic and delivers it with clarity and purpose.

#### **• Streamlining Hybrid Cloud Deployments at the Edge**

- IBM received more than 3,000 patents related to cloud and hybrid cloud technologies. One of the crucial decisions CIOs face today is determining which data will be processed on premises and which will be processed in the cloud. IBM inventors developed a technology to intelligently distribute the data processing components between the cloud, the edge and computing devices in-between. It offers the potential to greatly optimize the hybrid cloud for IoT workloads - such as GPS-generated driving instructions - that are sensitive to latency. Edge and hybrid cloud offerings are crucial parts of IBM's product roadmap. In 2020, they included the launch in May 2020 of the IBM Edge Application Manager, an autonomous management solution to enable AI, analytics and IoT enterprise workloads to be deployed and remotely managed, delivering real-time analysis and insight at scale. In addition, in

November 2020, IBM announced the [IBM Cloud for Telecommunications](#) to help companies unlock the power of edge and 5G in November 2020. The holistic hybrid cloud offering leverages IBM's innovative encryption capabilities, designed to enable mission-critical workloads to be managed consistently from the network core to the edge, to position telecom providers to extract more value from their data while they drive innovation for their customers.

- **Laying the Foundation for Powerful Quantum Applications**

- Quantum computing is a major focus for IBM and this is reflected in IBM's leadership in quantum computing patents obtained. One patent, for example, simplifies the mapping of quantum molecular simulation on a quantum computer. As a result, researchers will be able to explore simulating chemical reactions on quantum computers to understand how and when the discovery process around new materials and new pharmaceuticals will be revolutionized. IBM was also granted a patent that sets the foundation for investigating more accurate and efficient risk analysis calculations on a quantum computer. These ideas are already being extended by research done in collaboration with leading financial institutions.

- **Maximizing Security for the World's Most Sensitive Data**

- As enterprises work to protect their data, particularly in highly-regulated industries, IBM inventors received more than 1,400 security-related patents. One of the patents is used for fully homomorphic encryption (FHE), an IBM-pioneered method of performing computation on data that remains encrypted while being processed in order to maximize security for data in use. Previously, processing encrypted data required decryption before processing and re-encrypting the results, thus making data more vulnerable while unencrypted. IBM inventors patented a technique that allows encrypted data to be organized so that FHE vector comparison operations can be performed efficiently and maximizes the security of the data. IBM Security launched a service that allows companies to experiment with fully homomorphic encryption in December of 2020.

Patents were awarded to more than 9,000 inventors located in 46 U.S. states and 54 countries. Since 1920, IBM has received more than 150,000 U.S. patents and played a crucial role in innovations ranging from magnetic storage to laser eye surgery. IBM's culture of scientific research is integral to the company's legacy of innovation that matters to our clients and to the world. To that end, in April 2020, IBM announced that it was a founding partner of the Open COVID Pledge, which grants free access to the patents and patent applications of its portfolio of more than 80,000 patents worldwide to those developing technologies to help diagnose, prevent, contain or treat coronaviruses.

Read more about IBM's patent leadership [here](#).

*\*2020 patent data is sourced from IFI Claims Patent Service: <http://www.ificlaims.com>.*

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