

## **IBM Watson & Lithium-Air Battery R&D Collaboration**

### Speakers:

Shin Chang Ho, IP Executive, IBM Intellectual Property

Pae Young Woo, IBM, Client Technical Advisor

Dr. Kim Ho Cheol, IBM, Energy Research Manager

“The paradigm of the information age was just searching,” said Pae Young Woo, Client Technical Advisor for IBM, “but there’s just too much information out there and searching just isn’t going to do it anymore.” Mr. Pae was one of three speakers at the 2015 World Knowledge Forum’s event titled “IBM Watson & Lithium-Air Battery R&D Collaboration.”

Mr. Pae discussed the capabilities of Watson, IBM’s revolutionary technology that the company hopes will usher out the “information age” of computing in favor of a “cognitive age.”

“Living in the cognitive computing age,” said Mr. Pae, “we are now entering the age of information being converted into knowledge.”

Shin Chang Ho, IP Executive for IBM Intellectual Property, said that IBM was aggressively investing in research and development in order to maintain its edge in the new cognitive era. According to Mr. Shin, the company invests \$6.3 billion in R&D annually, and it has applied for more patents than any other company.

Mr. Pae discussed the development of Watson, which reached the public eye for the first time when the machine famously beat two of the greatest players in history on the trivia game show, Jeopardy! Since then, the machine, which searches based on a platform known as “deep Q&A,” has continued improving its intelligence and breadth of knowledge. The difference between traditional search and deep Q&A, said Mr. Pae, is that with deep Q&A, “We get the answer; we get the rationale, and we get the reliability or the level of confidence.”

Because Watson is able to “think” for itself, it is accessible to more than just computer programmers. One of the most successful applications of the technology is with doctors in oncology and other medical fields. “Although they are not data scientists and data experts,” said Mr. Pae, “they can continuously analyze the data and make informed decisions.” Because Watson can learn, he said it was uniquely suitable for the medical industry, in which information grows exponentially at a rate faster than any individual doctor could possibly keep up with. Because of this, Watson’s technology is already being applied in some of the top hospitals in the United States.

Dr. Kim Ho Cheol, Energy Research Manager for IBM, joined the panel to discuss the company’s research into another technological advancement, the lithium-air battery. He acknowledged the success of Tesla, which has developed electric cars and, more recently, the PowerWall, a lithium battery for home power storage. However, he said, Tesla still has a way to go to make the lithium battery more cost-effective than a traditional car. In order to gain an advantage, the battery would have to be able to store electricity for less than \$100 per kilowatt-hour. “Otherwise,” Dr. Kim stated, “it doesn’t stand a chance to gain an edge against gasoline cars. Even with an environmentally friendly mind, people couldn’t afford a car that was twice the cost.”

IBM instead aims to produce a lithium-air battery under that price point, and with a 500 mile range. Tesla’s current battery is estimated to cost \$300 per kilowatt-hour with a 265 mile range. “Compared to them,” said Dr. Kim, “our target is very aggressive. This is a grand challenge.”