

Grand Challenges of the 21st Century

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Technologies that Change the World

- **High risk, scientific game changers**
- **Broad implications for industry & society**
- **Powerful compelling proof points**

DNA Transistor
Cognitive Computing
The “Next Switch”
Quantum Computing
Lithium - Air Battery

**Grand
Challenges**

Deep Blue



BlueGene



BlueGene/Q

The world's most efficient high performance computer



'Mira'

- 10-petaflop performance
- Design ultra-efficient electric car batteries
- Study global climate change



'Sequoia'

- 20-petaflop performance
- Expected to be #1 on TOP500
- Study and maintain safety of US nuclear stockpile

Watson - *The state of the art in artificial intelligence precision, accuracy, confidence and speed*

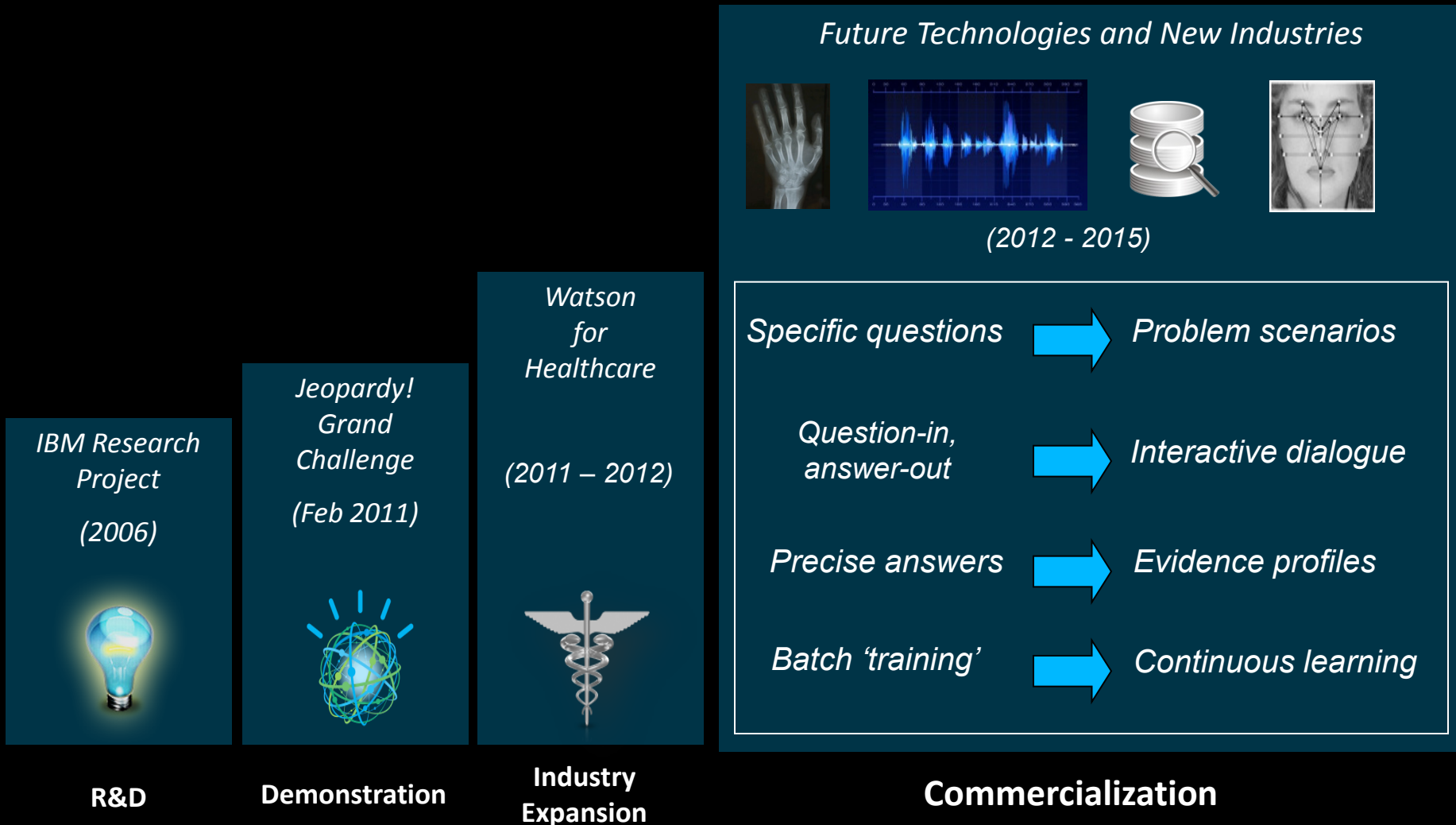
The image shows a Jeopardy! game board with three contestants: Ken Jennings on the left, Watson in the center, and Brad Rutter on the right. The board displays scores and a current question. A progress bar at the bottom shows Watson's performance on three questions.

Contestant	Score
Ken Jennings	\$24,000
Watson	\$77,147
Brad Rutter	\$21,600

Question	Contestant	Score	Accuracy
Who is Stoker?	Ken Jennings	\$1,000	99%
Who is Bram Stoker?	Watson	\$17,973	60%
Who is Bram Stoker?	Brad Rutter	\$5,600	10%

Watson's evolution

The road to commercialization



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