EXPLAINED

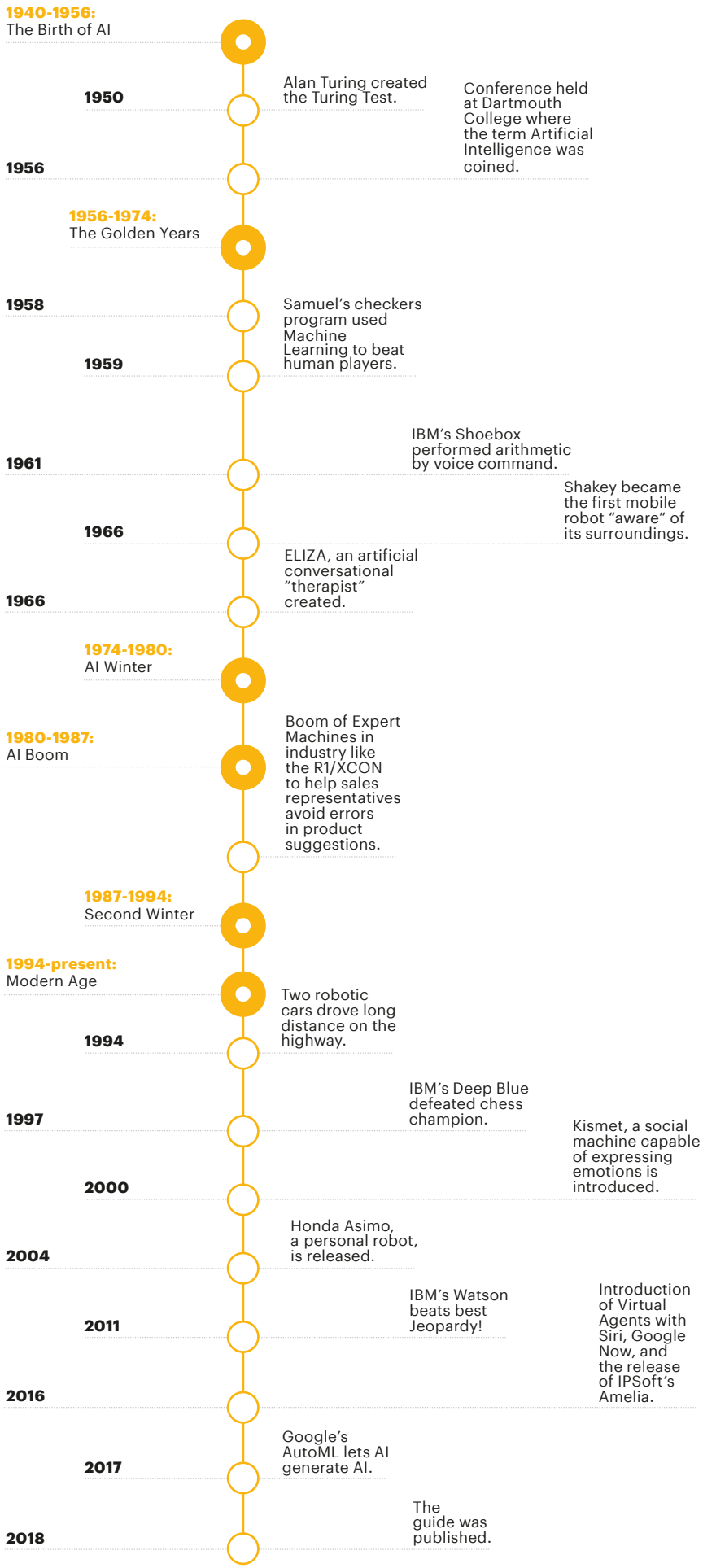
THIS TIME IT'S DIFFERENT

Accenture Applied Intelligence

AI is far from a new idea, it's true. The term "artificial intelligence" was coined as long ago as 1956.[1] And the history of the technology's development has been characterised by waves of optimism followed by disappointment and periods of inertia (these have even been dubbed 'AI winters'). Each previous breakthrough has only ever partly lived up to the hype it generated, and none have managed to kick-start the technology into the mainstream.

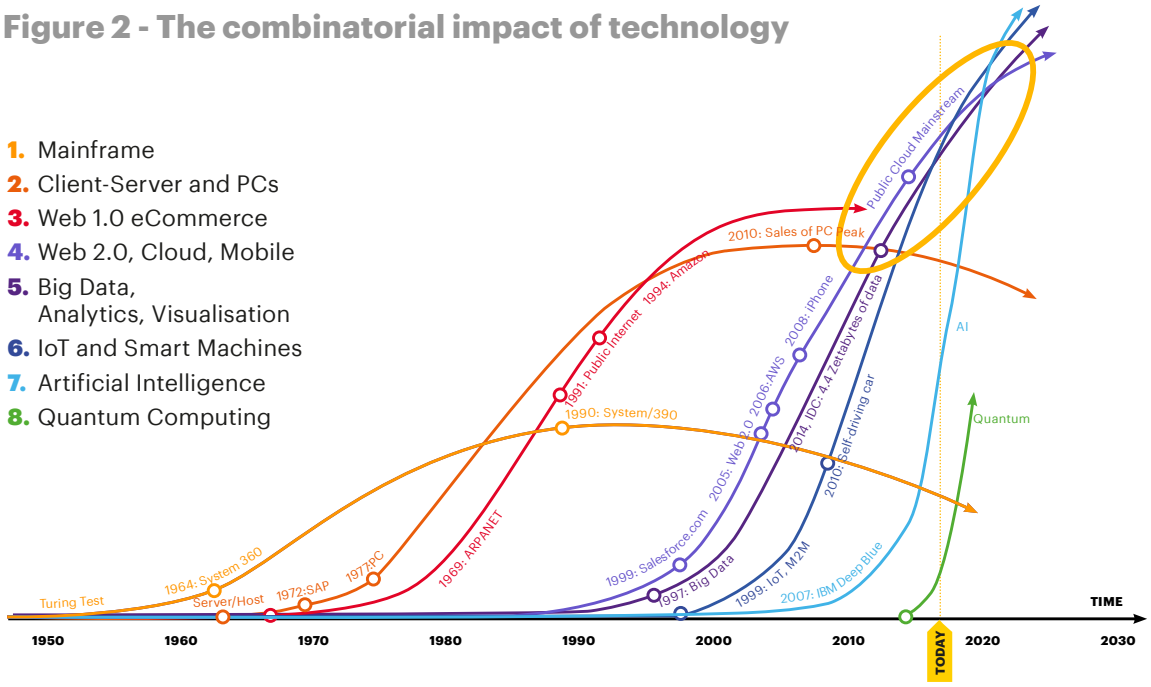
So what's different this time?

Figure 1 - The history of AI



The big change today is that we're in an unprecedented period of technology innovation across so many different fields. Today's AI applications can make use of virtually unlimited processing power in the cloud. They can also exploit a growing trend for custom-designing computer chips for specific tasks, especially in analytics, which is enabling even greater levels of computational efficiency and speed. Consider, for example, the vastly increased processing power that comes from using Graphics Processing Units (GPUs) in place of Central Processing Units (CPUs). But Google has taken it one step further, the Tensor Processing Unit (TPU) delivering 30-80 times higher performance-per-watt that contemporary CPUs and GPUs.[2]

Figure 2 - The combinatorial impact of technology



When you add the decreasing cost of storage[3] to the mix (down from $0.5 million a gigabyte in 1980 to 3 cents a gigabyte in 2015), plus the exponential growth in data volumes with which we can train AIs, together with the emergence of open source platforms and frameworks, you've got a uniquely potent combination of technologies and capabilities. It all adds up to a very powerful foundation to give AI its critical mass for mainstream adoption.

Virtually all the leading technology giants around the world – Google, Amazon, Facebook, Microsoft, Baidu, Alibaba, and Tencent – are sharply focused on AI. Other entrepreneurs and investors are equally keen. More than half of European start-ups are focused on AI, and investments in AI businesses are typically 20 to 30% higher than those in other businesses.[4]

That's not to say everyone agrees on precisely when AI will reach its tipping point. Nor on whether we'll see general AI (as opposed to narrow AI) any time soon. On the one hand, a survey of 350 experts by the Universities of Oxford and Stanford[5], concluded that there is a 50% chance of machines outperforming humans in all tasks within 45 years. On the other hand, a quarter of the eminent AI researchers surveyed by Etzioni in 2016 said they thought superintelligence would never materialise at all.[6]

"Artificial intelligence would be the ultimate version of Google. The ultimate search engine that would understand everything on the web. It would undertand exactly what you wanted, and it would give you the right thing. We're nowhere near doing that now. However, we can get incrementally closer to that, and that is basically what we work on."

Larry Page, 2000

Your competitors are probably already using AI today

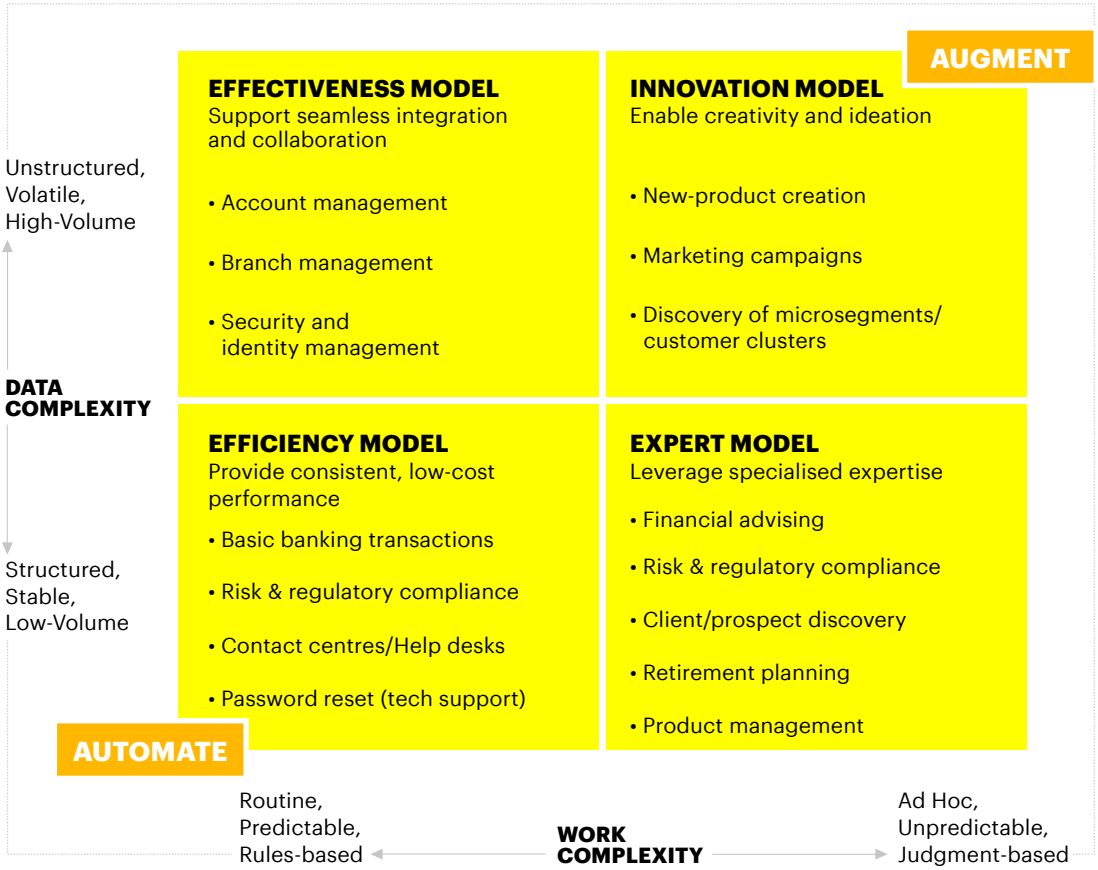
So we don't have general AI yet. But, with the underlying technologies accelerating at breakneck pace, narrow AIs are already doing remarkable things in real-world business applications.

As organisations continue to ramp up their use of AI, the complexity of both the data and the work that it can handle will only increase. To understand how this might play out in a business context, it can be helpful to view the possible applications of the technology through the following framework (here illustrated fort he financial services industry). The framework maps four different models for approaching AI – efficiency; effectiveness; expert; innovation – against the degree of data and work complexity involved.

In our work with our clients, we already see evidence of AI being scaled and industrialised. Many organisations have been running pilots over the last few years to test how AI might impact their people, their processes, and their products. Now, we expect those organisations to start scaling their pilots across their enterprises. As many as three-quarters of executives say that some kind of AI will be "actively implemented" in their organisation within three years.[7]

All in all, the message is clear: AI is ready. And it's a big deal.

Figure 3 - A framework for understanding AI's potential applications



Recommended Reading

The Second Machine Age by Erik Brynjolfsson and Andrew McAfee
Machine, Platform, Crowd by Erik Brynjolfsson and Andrew McAfee
Life 3.0 by Max Tegmark
Human + Machine: Reimagining Work in the Age of AI by Paul Daugherty & James Wilson (forthcoming March 20th, 2018)
Homo Deus by Yuval Noah Harari
The Quest for Artificial Intelligence by Nils Nilsson
The Master Algorithm by Pedro Domingos
The Future of the Mind by Michio Kaku

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Sources

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