2019 TOP 10 TRENDS

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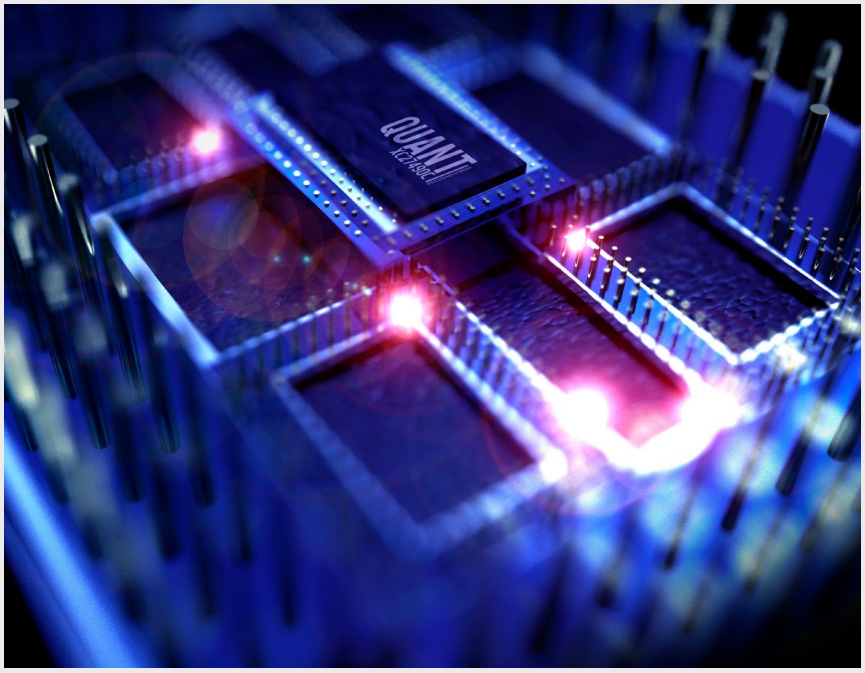
1

QUANTUM COMPUTING

Quantum computing is going to add processing power exponentially faster than breed of computer processors.

Earlier this year, Intel announced a major milestone in building quantum computing systems with 49 qubits -- enough to supersede practical limits to modern computers. IBM and Google also made similar announcements. Although we probably won't see an immediate replacement of classic computers in the next year, IBM has already opened up a playground where people can start experimenting with this new technology.



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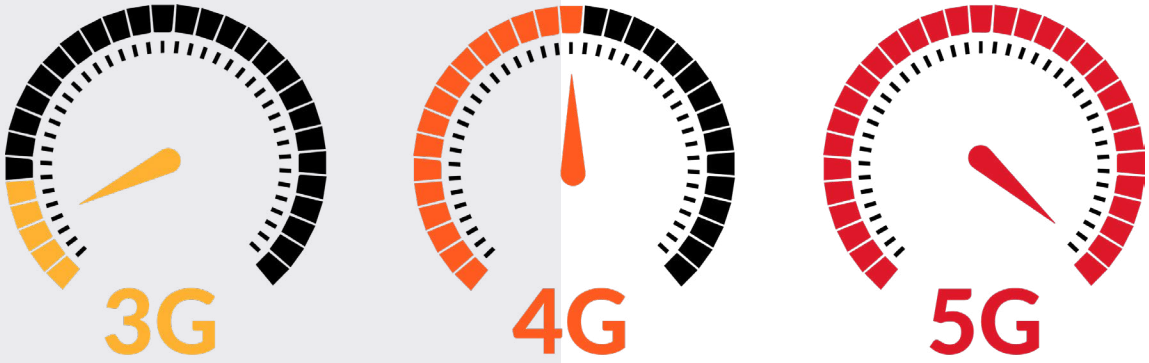
5G INTERNET CONNECTIONS

5G technology, which is slowly getting adopted across the globe, brings with it the potential of blazing fast upload and downloads.

Some providers, like Verizon, have already deployed 5G to a few cities in the United States. 5G technology builds upon lessons learned from 4G and delivers speeds of 1GB uploads and downloads per second. That's right, no more spinning wheels when you're watching cat videos on your phone on the way to work.



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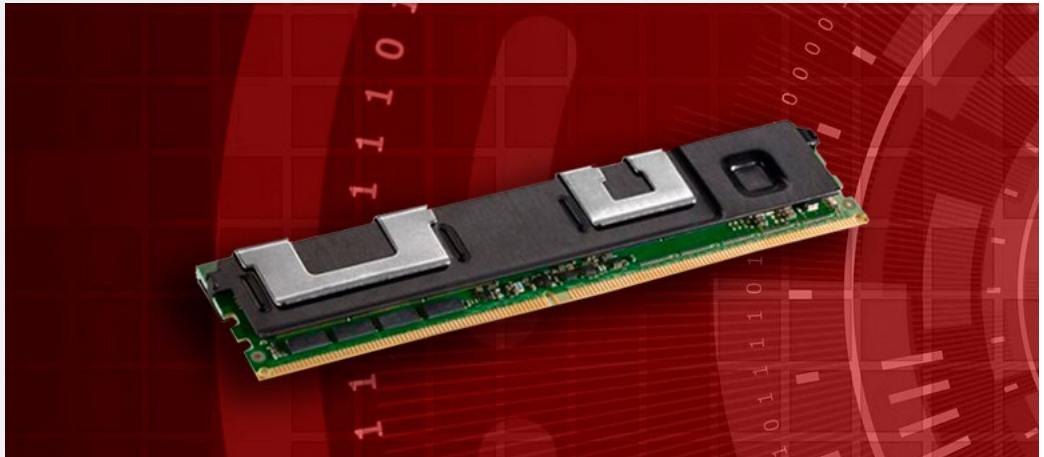
PERSISTENT MEMORY

Intel recently announced the launch of Optane DC persistent memory, which looks like any standard RAM but can store terabytes and even persist data when power is switched off.

I am hopeful this technology will continue to improve and eventually replace hard drives for the majority of use cases. With this increased capacity, vasts amounts of data can be processed in real time and persisted without ever touching a disk.



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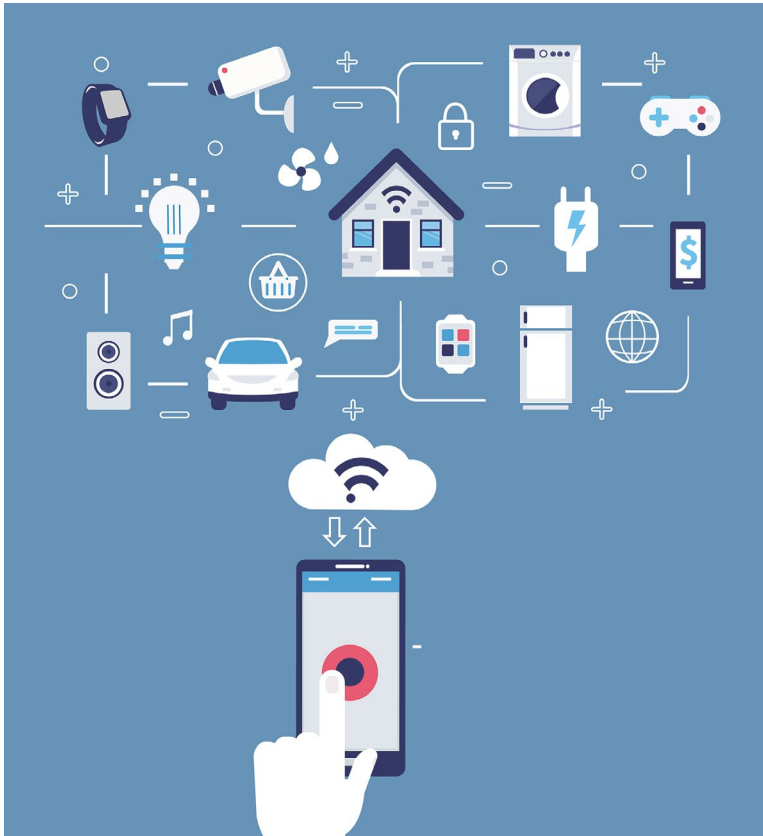
REAL-TIME DATA PROCESSING AT THE EDGE

Internet of Things is entering its second phase of evolution with more real time data processing at the edge.

With advances in quantum computing, faster broadband delivery and persistent memory, a lot more data processing will happen in real time at the edge (i.e. in devices for autonomous cars, smart cities, facial recognition, wearable tech and more). This phenomenon is often mentioned under the category of edge or fog computing and will become more real as processing gets faster, data becomes available in memory all the time and network speeds increase exponentially.



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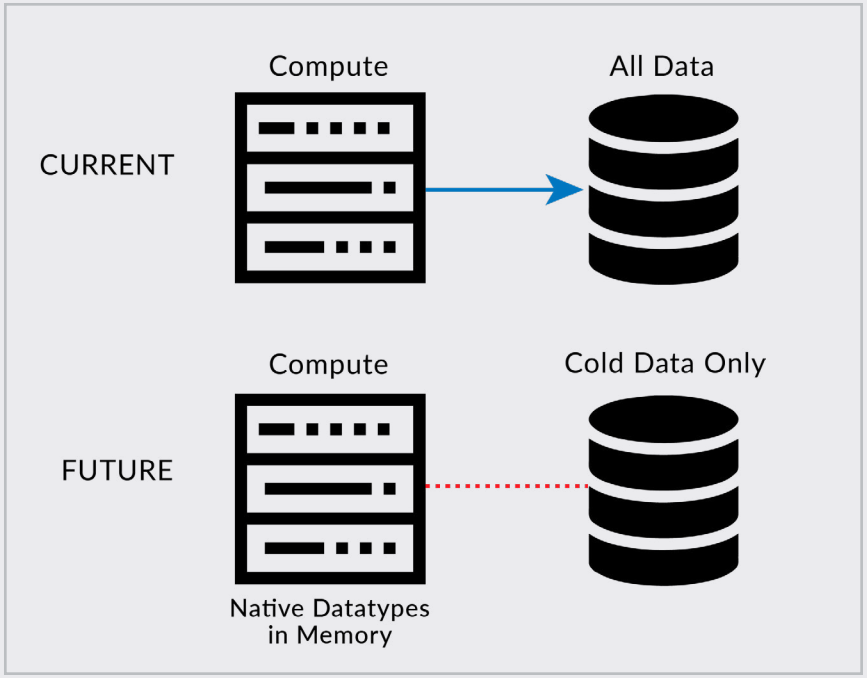
In traditional big data implementations, we saw programming logic move to the data. Now we will start seeing the reverse.

DATA PROCESSING WITHIN COMPUTE

In traditional big data implementations, we saw programming logic move to the data (think MapReduce and Hadoop). Now, we expect we'll begin to see the reverse. Data, and more importantly data types will be pulled into compute for near-zero latency processing because any latency from seeking data on a disk will no longer be acceptable.



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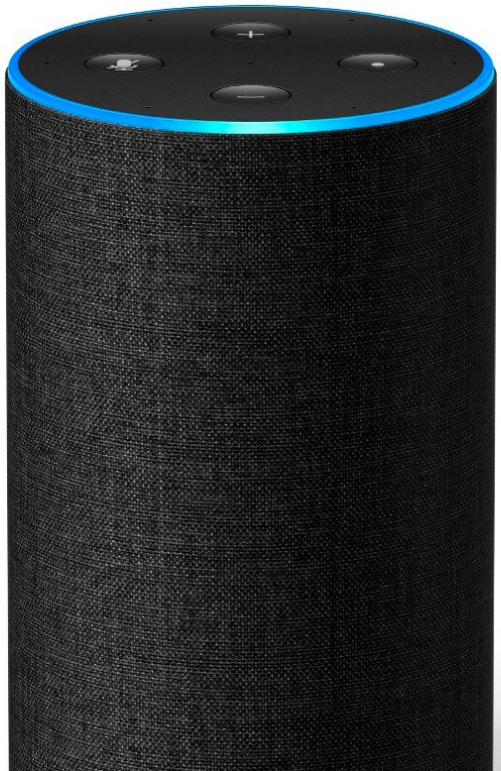
SERVERLESS ARCHITECTURES

Function-as-as-a-Service solutions for better speed and affordability.

Serverless processing of large data sets will move more workloads away from big data to functions orchestrated at scale with Kubernetes-like tools. This means that more organizations will be able to process big data by utilizing Function-as-as-a-Service (FaaS) solutions for better speed and affordability.



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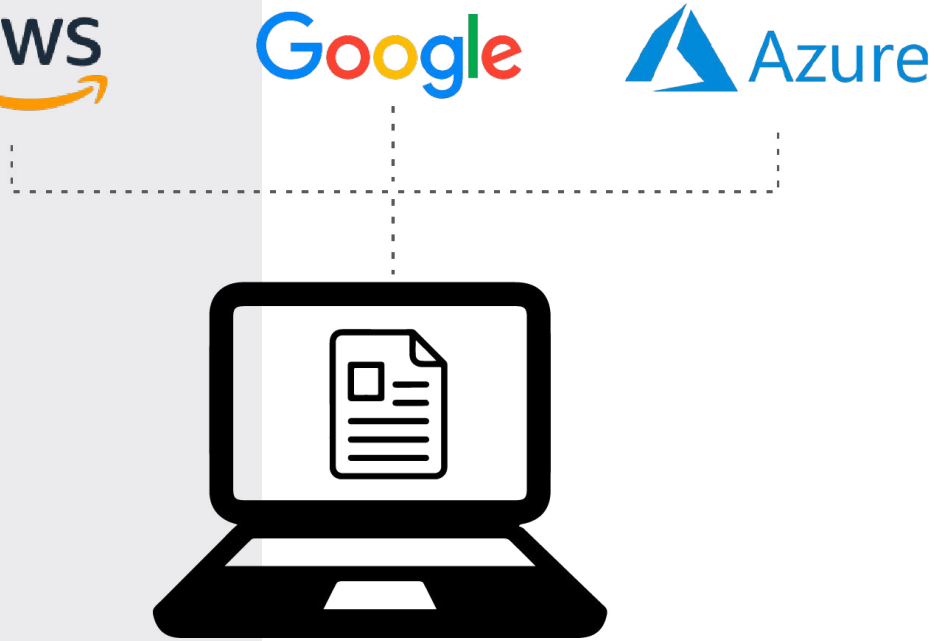
With wider adoption of Kubernetes, we will finally start seeing organizations deploying applications across multiple cloud platforms.

MULTI-CLOUD

Multi-cloud adoption will make data storage agnostic to cloud platforms and providers. Your data could be stored partially on AWS and partially on Google Cloud or even on edge computers, for example. More and more organizations will use technologies like Kubernetes to break away from single provider lock-in.



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If the ML algorithms are allowed to learn from the data, you can almost be certain that those biases will persist and this is one challenge all AI and ML providers will have to overcome.

ELIMINATION BIAS IN AI/ML

We will also see companies with massive amounts of consumer data (Google, Facebook, etc.) try to sift out bias from their data sets to make their AI and machine learning (ML) models more accurate and bias-free. Today, for example, we can argue how a lot of bias exists in how personal loans were granted in the last 50 years.

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We will see more traction on this both from the perspective of collecting and processing data as well as additional government rules and regulations.

DATA PRIVACY

With today's large volumes of data collection and instant processing requirements, data privacy will continue to dominate many data storage and processing decisions. This year, we saw the introduction of General Data Protection Regulation (GDPR) in EU that had far reaching consequences on how companies collect and use private data.

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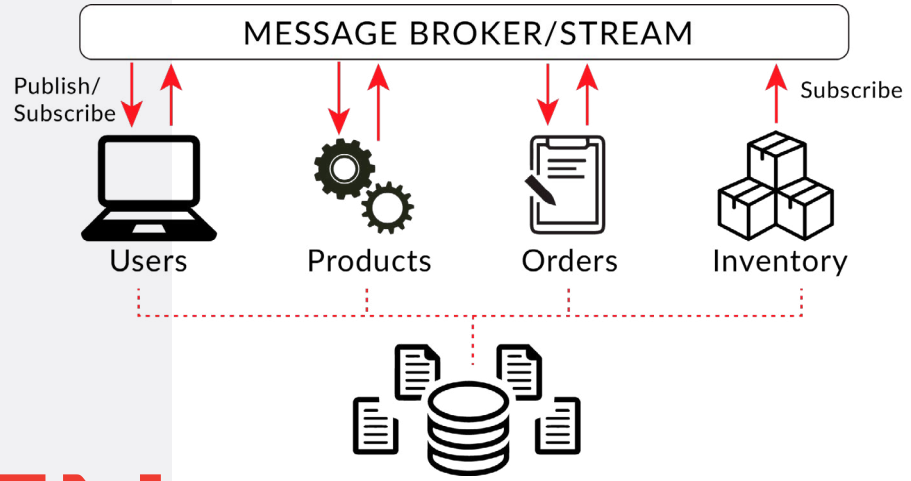

EVENT-DRIVEN ARCHITECTURES

Microservices architectures will further evolve. For instance, as specific services increasingly require the ability to work together with monolithic applications, Mesh App and Services Architectures (MASA) are gaining in popularity. This approach uses data services for listening to events and reacting to them in real time.

The single biggest takeaway from these 2019 predictions should be that we are headed to a zero latency future. This is a an exciting future because finally, just like electricity, we will start to see real time computing become pervasively available and invisible at the same time. This will require businesses to rethink how they collect and process their data, all over again. Therein lies some of the biggest challenges and opportunities.

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