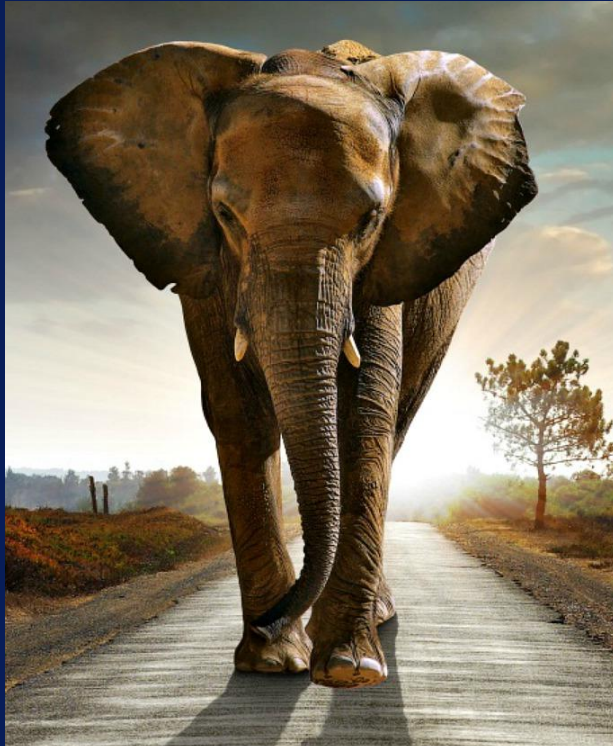


Characteristics of Big Data:

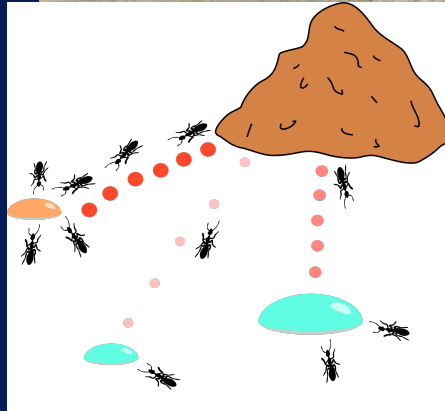
Volume

Volume = Size

Volume = Size



Volume = Size



Every minute...



204 Million emails

Every minute...



204 Million emails

200,000 photos

facebook

1.8 Million likes

Every minute...



204 Million emails

200,000 photos

facebook

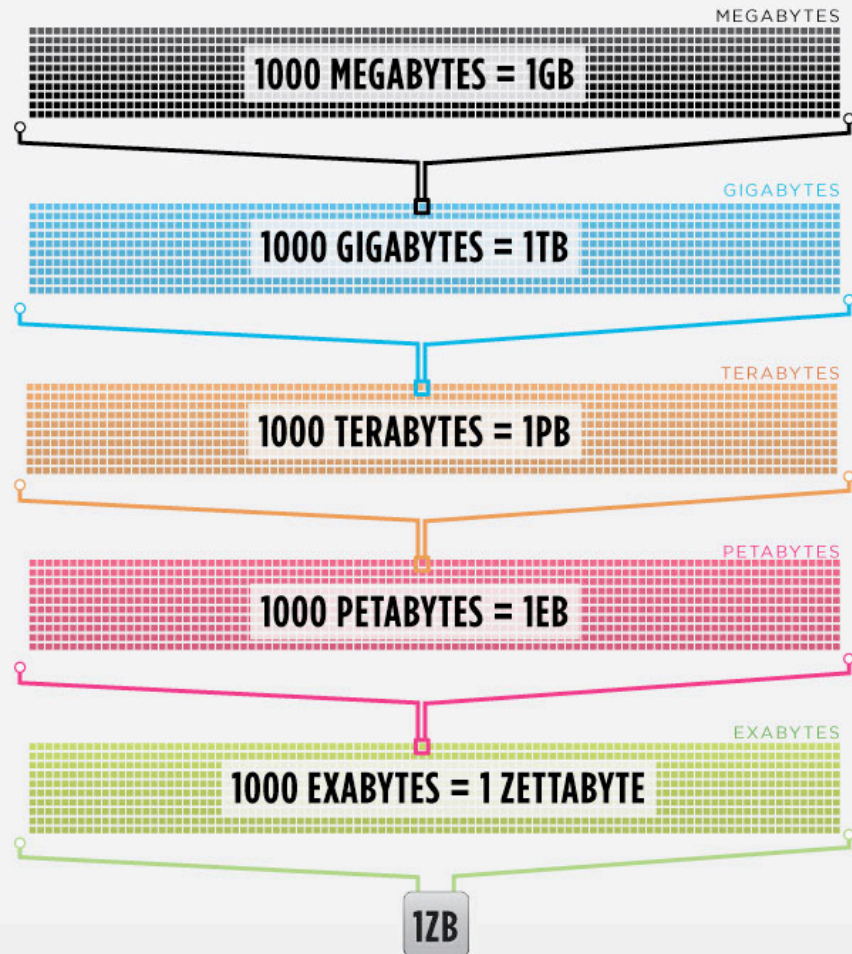
1.8 Million likes



1.3 Million video views

72 hours of video uploads

But how much data are we talking about?



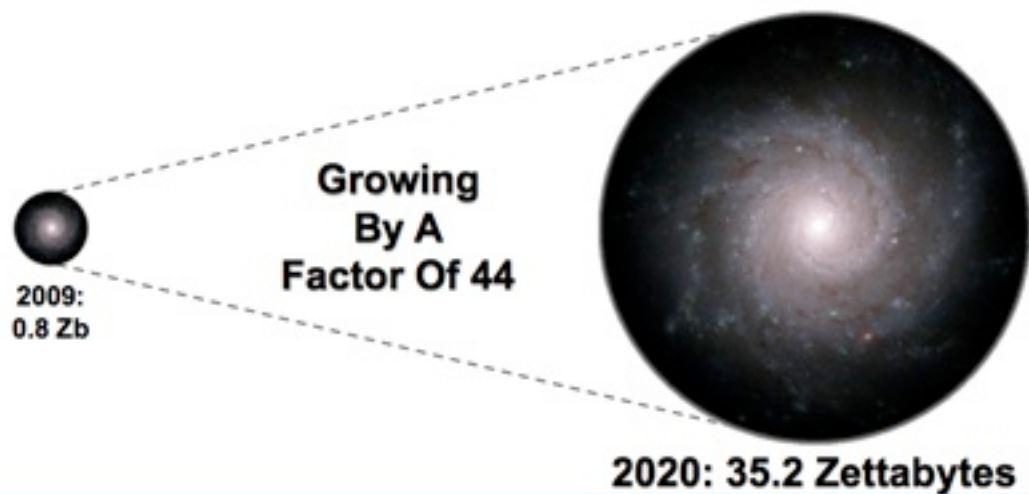
100 MBs \approx couple of volumes of Encyclopedias

A DVD \approx 5 GBs

1 TB \approx 300 hours of good quality video

LHC \approx 15 PBs a year

The Digital Universe 2009-2020



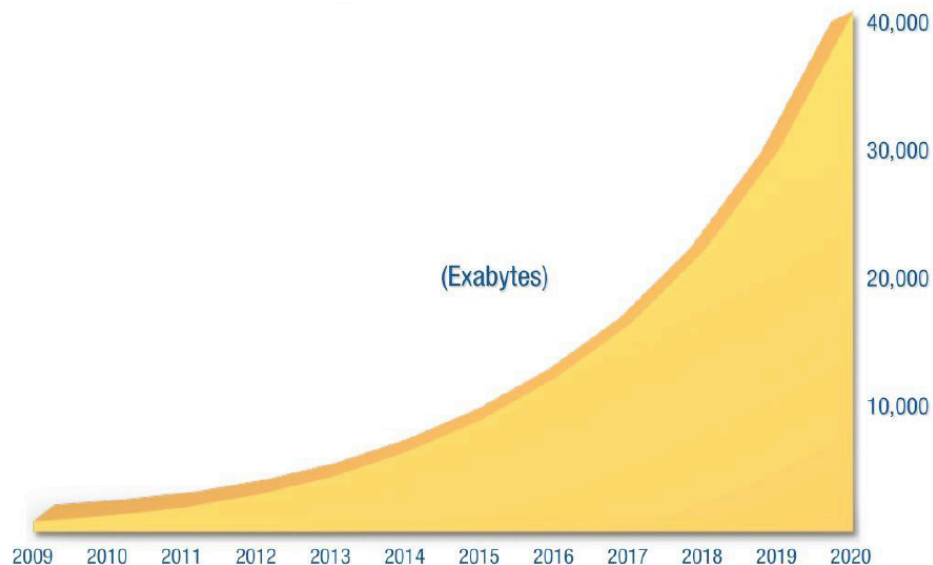
EMC²
What's possible next?

Source: IDC Digital Universe Study, sponsored by EMC, May 2010

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Exponential data growth!

The Digital Universe: 50-fold Growth from the Beginning of 2010 to the End of 2020



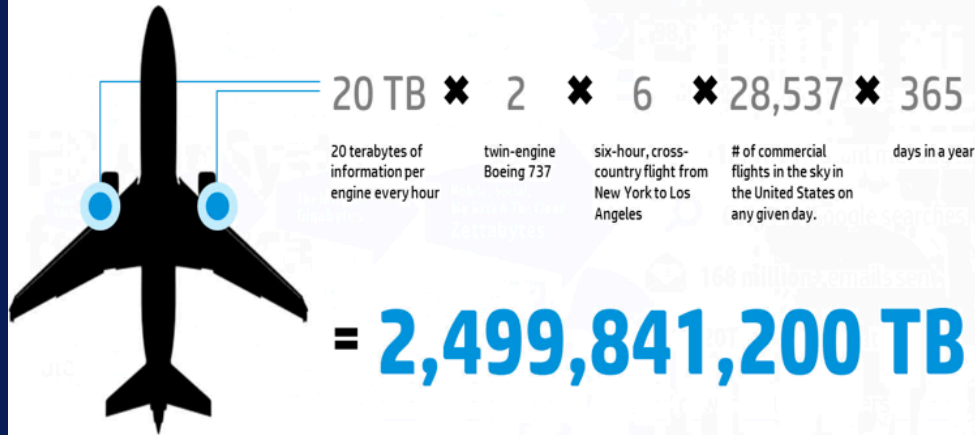
This IDC graph predicts exponential growth of data from around 3 zettabytes in 2013 to approximately 40 zettabytes by 2020. An exabyte equals 1,000,000,000,000,000 bytes and 1,000 exabytes equals one zettabyte. Source: IDC's Digital Universe Study, December 2012, <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>.

Relevance of Volume for Us?



More data = Better safety

Sensor data from a cross-country flight

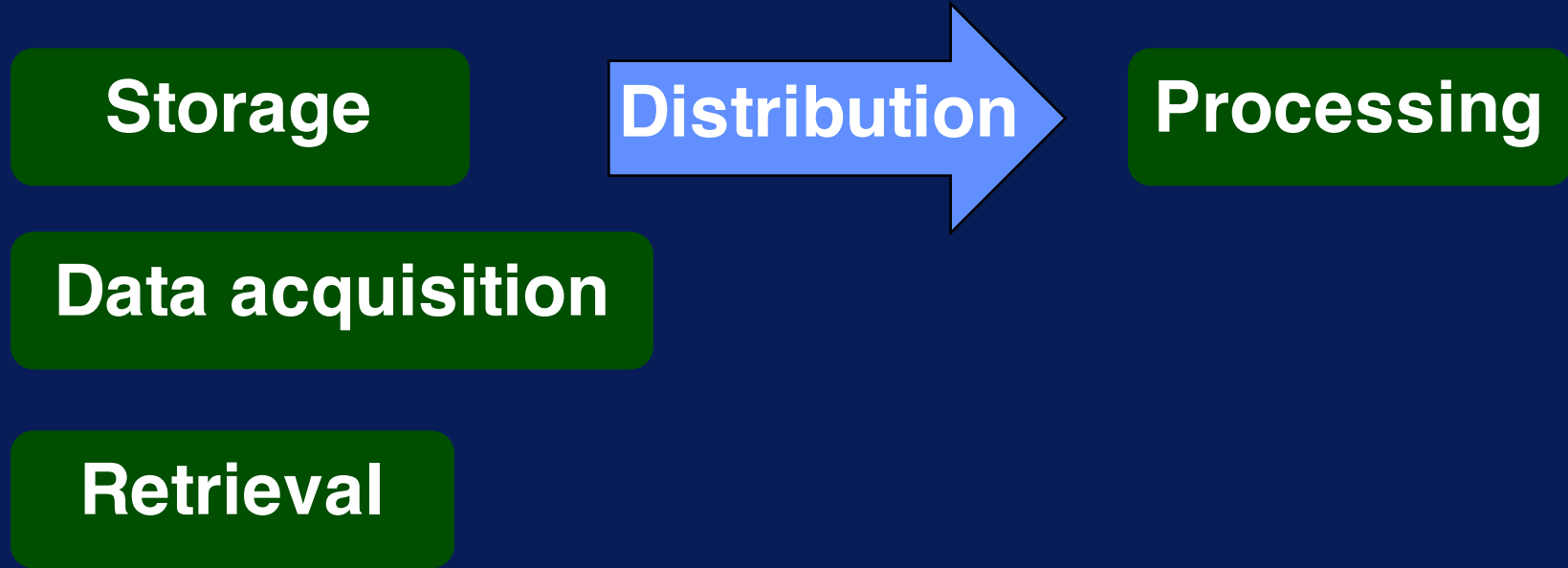


Volume



Business Insight

Challenges: Storage and more...



Processing Big Data



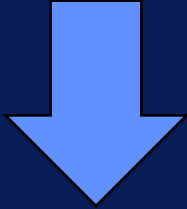
Volume

The diagram consists of three large green arrows arranged horizontally. The leftmost arrow points upwards and contains the word 'Volume'. The middle arrow points downwards and contains the word 'Performance'. The rightmost arrow points upwards and contains the word 'Cost'. All text is in white, bold, sans-serif font.

Performance

Cost

Volume = Size



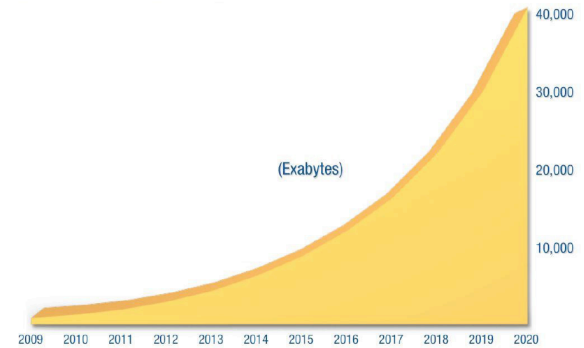
Challenges

Storage

Access

Processing

The Digital Universe: 50-fold Growth from the Beginning of 2010 to the End of 2020



This IDC graph predicts exponential growth of data from around 3 zettabytes in 2013 to approximately 40 zettabytes by 2020. An exabyte equals 1,000,000,000,000,000 bytes and 1,000 exabytes equals one zettabyte. Source: IDC's Digital Universe Study, December 2012, <http://www.emc.com/collateral/analyst-reports/idc-the-digital-universe-in-2020.pdf>.