

Data Management

INFO6540; BUSI6517; MGMT4540

Week 1 - Jan 9, 2018



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Today

- Introductions
- Course Overview
- The messy data problem
- Q&A
- Lab 1



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Introductions



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Course Overview

- Course Philosophy
- My view on Data Management



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Why you should take this class

- Data literacy is a vital skill in a knowledge economy



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Literacy: the ability to read and write



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Literacy: the ability to read and write

Comprehension and creation
(of written text)



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data

^ Literacy: the ability to read and write

Comprehension and creation
(of ~~written text~~ data)



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Data literacy: comprehension and creation of data



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“By 2018, the United States alone could face
a shortage of 140,000 to 190,000 people
with deep analytical skills...”

-McKinsey Global Institute



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Expectations

- What you know already
- What you'll learn in class
- What you'll learn outside of class



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What is Data?



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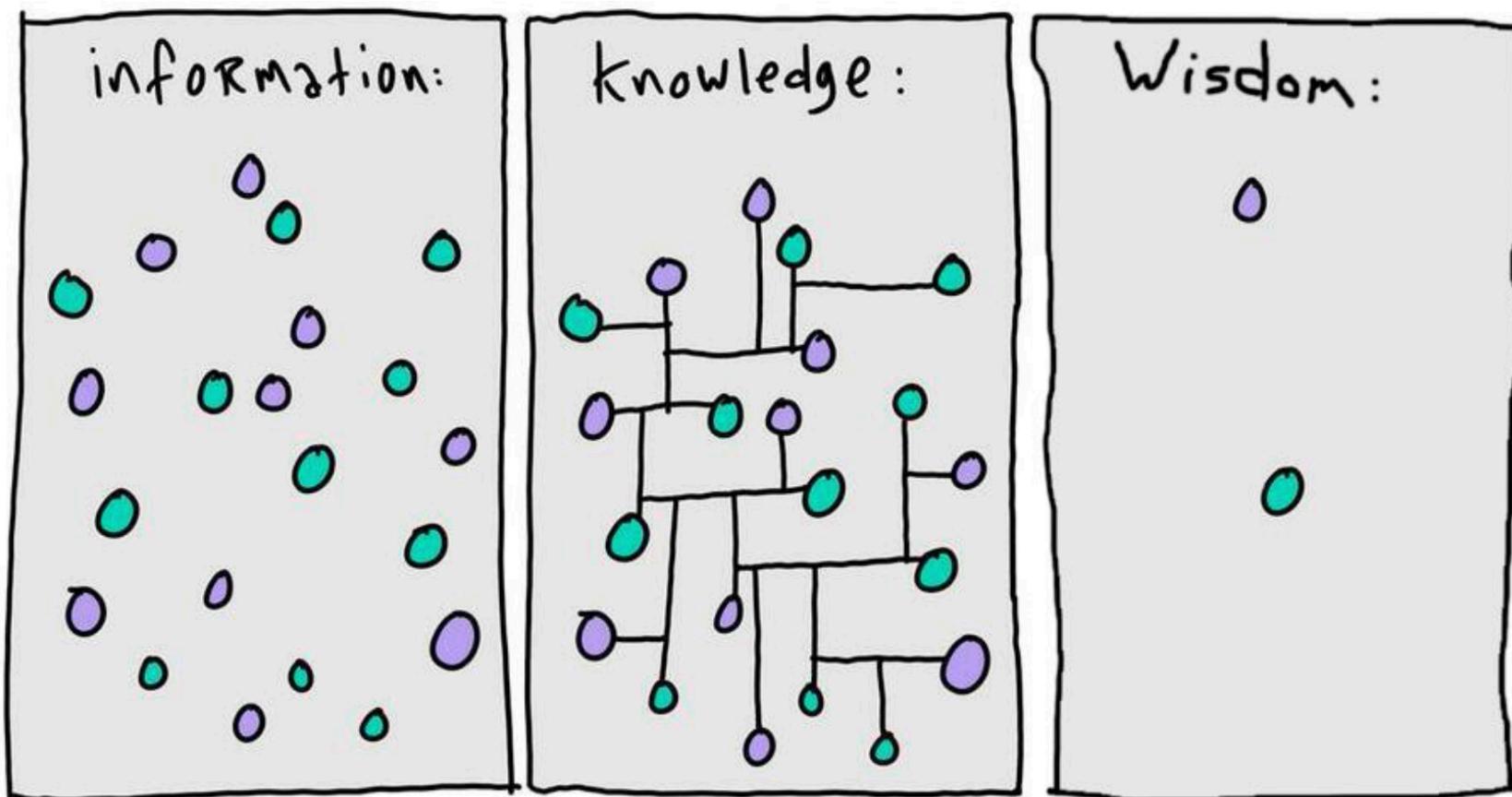
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Data vs. information: What is the difference?

- What is data?
 - Unprocessed information
- What is information?
 - Data that have been organized and communicated in a coherent and meaningful manner
 - Data is converted into information, and information is converted into knowledge
 - Knowledge: information evaluated and organized so that it can be used purposefully



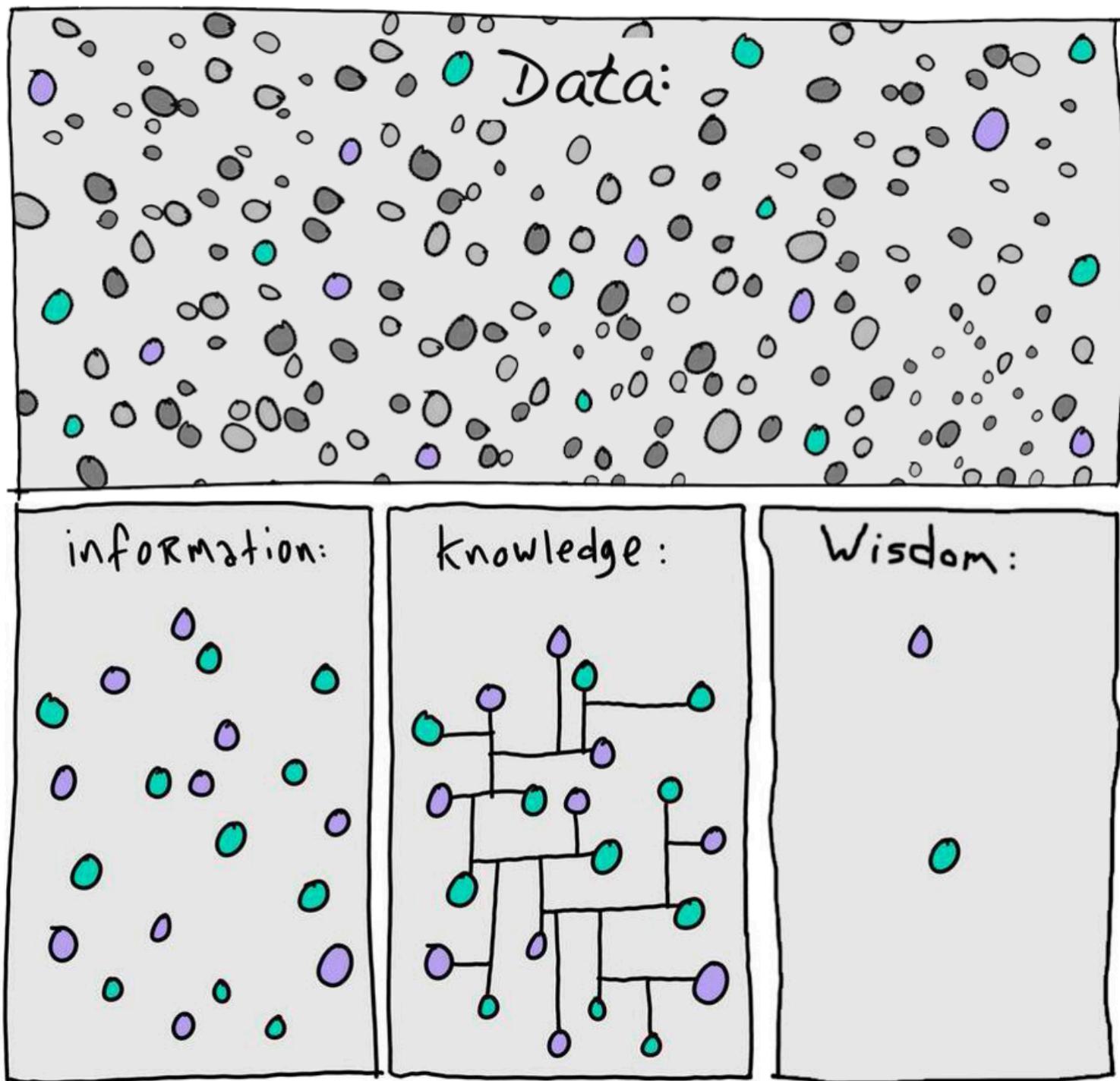
DIKW Continuum

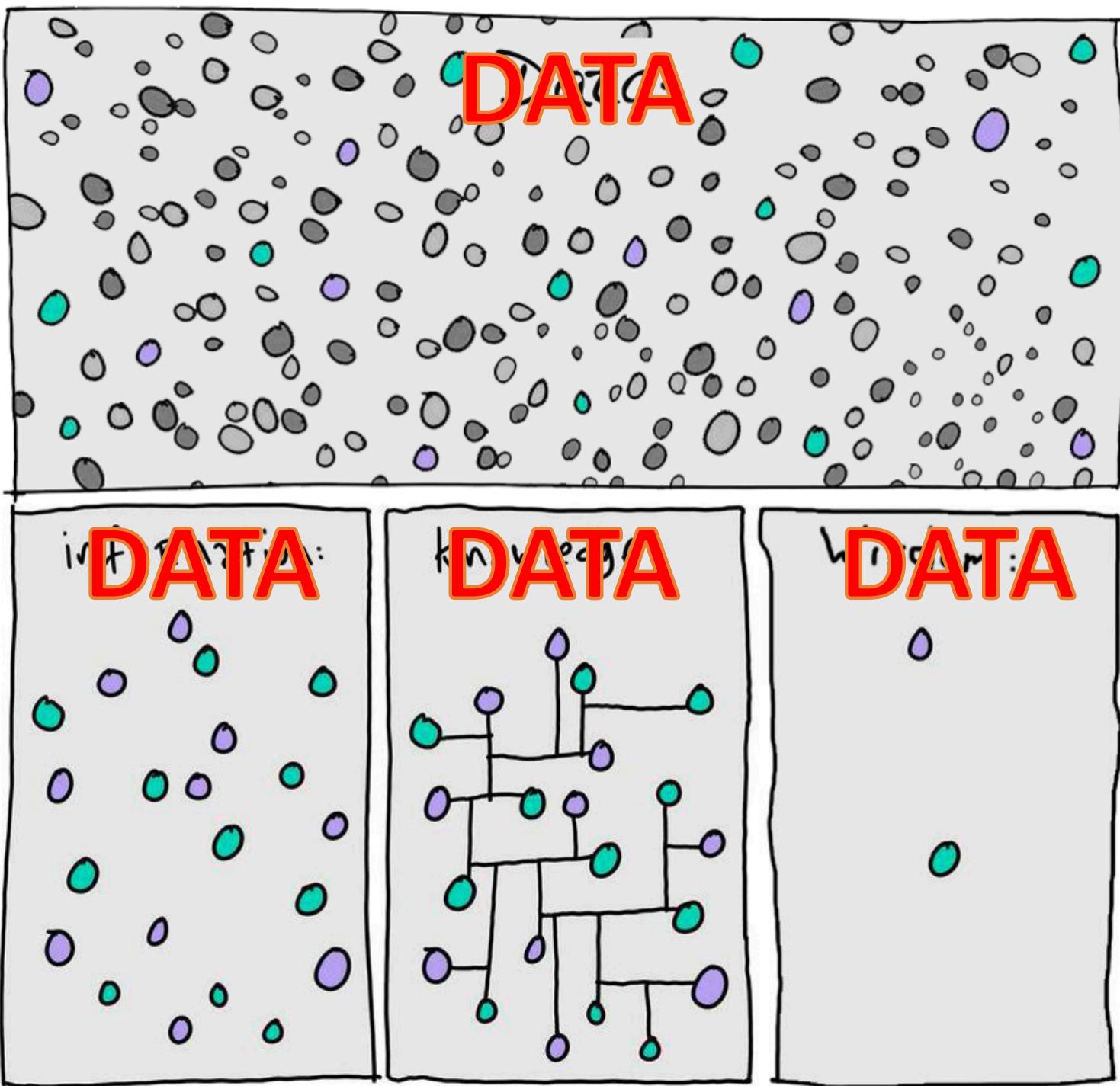


Bob Marshall via Twittwer @flowchainsensei
<https://twitter.com/flowchainsensei/status/408167162344648704>



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What is a Database?



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Database

- An organized collection of data
- Typically has a “data model”
 - i.e. a set of rules (or guiding principles) for how it is organized



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Database Management System (DBMS)

- Software that manages a collection of data
- Often equated with a relational database management system – more on that later



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The Data Evolution



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**\$3398
10MB**

THE HARD DISK YOU'VE BEEN WAITING FOR

XCOMP introduces a complete micro-size disk subsystem with more ...

- MORE STORAGE
- MORE SPEED
- MORE VALUE
- MORE SUPPORT

S100 users... The XCOMP subsystem is now available with 10 megabytes of storage; 5 megabytes also available at \$2,898.00. Compare the price and features of any other 5½-inch — or even 8-inch system, and you'll agree that XCOMP's value is unbeatable.

OUTPERFORMS OTHER HARD DISKS

Floppy disk and larger, more expensive hard disks are no match for this powerful S100 system. More data is available on every seek: 64K on 10MB and 32K on 5MB. Faster seek time too — an average of 70MS. It provides solid performance anywhere with only 20 watts of power. Data is protected in the sealed enclosure, and the landing zone for heads provides another margin of safety. The optional power board plugs directly into the S100 bus and provides power for the drive.

FAST CONTROLLER

The XCOMP controller is the key to this system's high efficiency operation. Speed-up features include interleave without table lookup, block-deblock with controller buffer, and read lookahead. OEMs worldwide have already proven the outstanding performance of the XCOMP controller.

MORE SOFTWARE

Included with the system is software for testing, formating, I/O drivers for CP/M® plus an automatic CP/M driver attach program. Support software and drivers for MP/M® and QBasic® are also available. The sophisticated formating program assigns alternate sectors for any weak sectors detected during formating, assuring the lowest possible error rate — at least ten times better than floppies.

WARRANTY

The system has a full one-year warranty on parts and workmanship.

ALSO AVAILABLE FROM XCOMP

- General Purpose controllers (8 bit interface), with easy interface to microprocessor-based systems.
- GP controller adapter that plugs directly into most Z80 computers.
- ST/R GP controller for the 5MB and 10MB drive above, with ST506 type interface.
- SG/R GP controller for SA1000 interface.
- SM/R GP controller for storage module drives. S10/S, SQ/S, and SM-S, same as above, for the S100 bus.

Quantity discounts available. Distributor, Dealer, and OEM inquiries invited.

See your local Dealer, or call:

XCOMP, Inc.
7566 Trade Street
San Diego, CA 92121
Tel: (714) 271-8730
Telex: 182786

Circle 429 on inquiry card.

XCOMP



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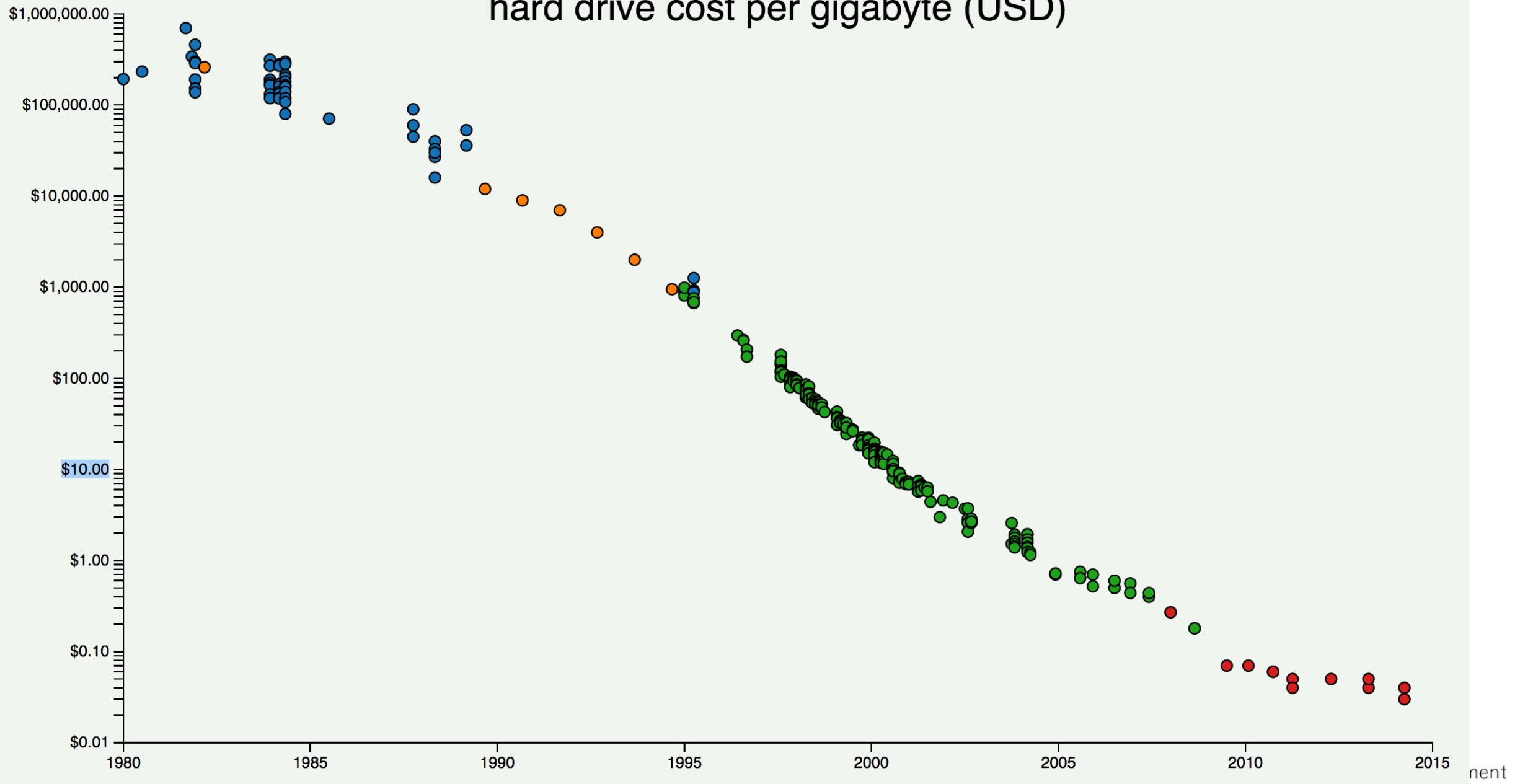
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hard drive cost per gigabyte (USD)



Digital traces



NETFLIX

amazon

BMO  Financial Group

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So where are we now?

- Vast amounts of data:
 - Big Data = volume, velocity, variety
 - But any 1 of the 3 is challenging
- Some data is well-structured
- Most is just out there, with varying structure

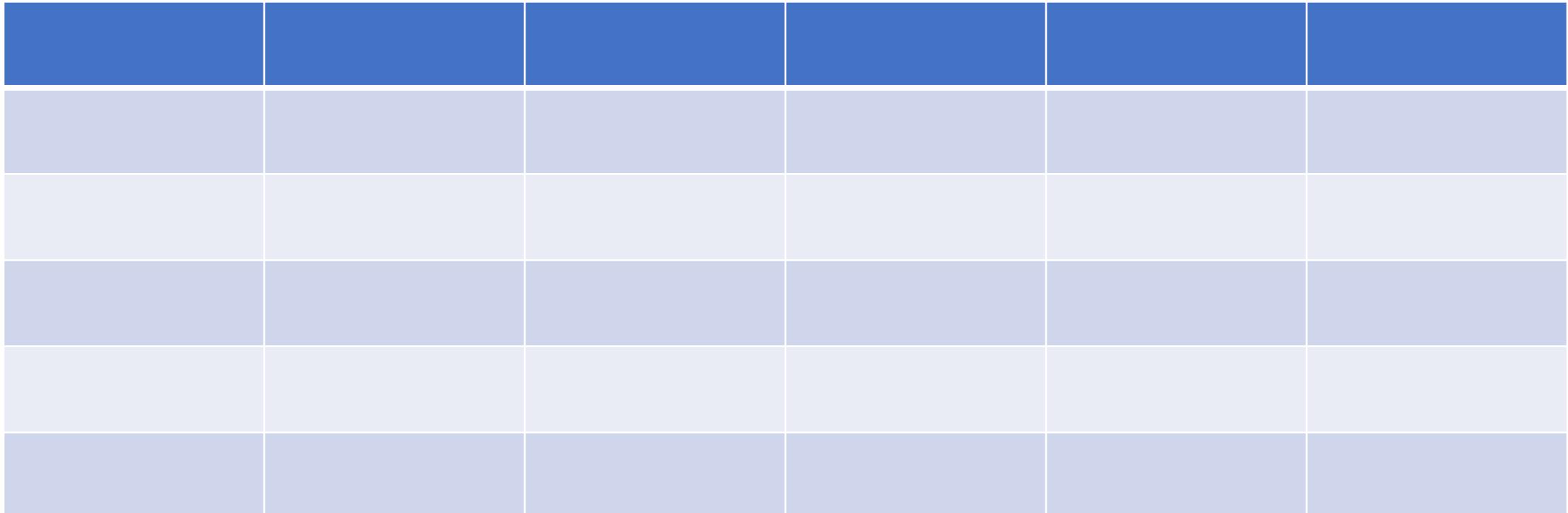


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The structure continuum

- Unstructured
- Semi-structured
- Structured

The most basic structure



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The power of Excel

- A spreadsheet is a database, by the earlier definition
- ...so Excel is kind of like a DBMS.
 - Kind of.



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Lab work



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