

BADM/ACCY 352  
Database Design and Management  
Spring 2017

Yi Yang, PhD

# Welcome

- course overview
- introduction to database

# Course Information

- Instructor:
  - Yi Yang (Northwestern Univ. PhD, 2015)
  - Email: [yiyang@illinois.edu](mailto:yiyang@illinois.edu)
- Office hour
  - Monday 2:00 – 4:00 pm @ 446 Wohlers Hall,
  - or by appointments
  - No TA
- Time/Place
  - M/W 11:00 am – 12:20 pm @ Wohlers 243

# You need to have

- I-Clicker for answering question
- A laptop for lab sessions
- Textbook (Optional):
  - Database Systems: Design, Implementation and Management: 11th Edition.
  - Authors: Carlos Coronel, Steven Morris, Peter Rob
  - The textbook is reserved in the main library.
  - Link: [https://vufind.carli.illinois.edu/vf-uiu/Record/uiu\\_7864545](https://vufind.carli.illinois.edu/vf-uiu/Record/uiu_7864545)

# Course Information

- 17~19 lectures
- 5 lab sessions
- 6 assignments
- 1 group project
- 1 guest speaker
- 2 exams

# Grading

- 93-100 (A) ....
- Class attendance: 10%
- Assignments (6): 25%
- Test 1: 20%
- Test 2: 25%
- Group Project: 20%

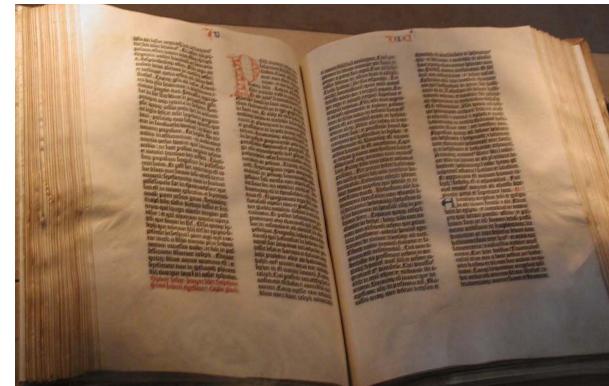
# Others

- Academic Integrity
  - Don't copy other's lab work
- Class attendance
  - If you forget to bring i-clicker, let me know after class
  - If you have job interview and will have to miss the class, let me know.
  - Class attendance rule: student code 1-501

# FAQ

- Does it require previous programming experience?
- My laptop is old/slow, can I do lab session well?
- What's the best way to learn this course?
- Your questions?

# How is data stored



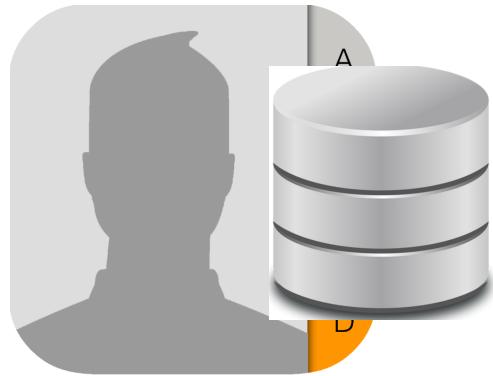
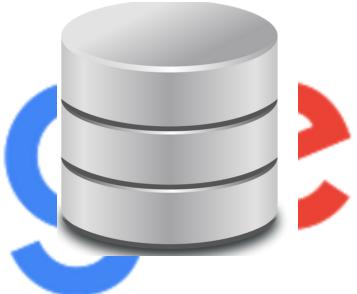
**amazon**



**United  
Airlines**



**Google**



# Big data era

*“Every two days now we create as much information as we did from the dawn of civilization up until 2003.”*

- Eric Schmidt, former Google CEO

# Big data era

- Facebook: stores 300 **PB** data, with an incoming daily rate of about 600 **TB**. (as of 2014)
- YouTube: 1000 PB video storage, 100 M views/day
- Google: 4M searches/minutes, stores 10 EB data(estimation)
- AT&T: 1.9 T phone call records, 70,000 calls/second
- US Credit cards: 1.4 B cards, 20 B transactions/year

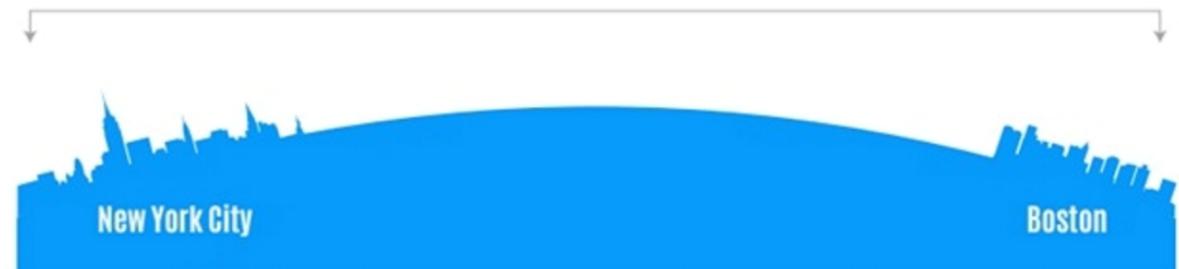
**GIGABYTE**  
10 Inches Diameter



**TERABYTE**  
800 Feet Diameter



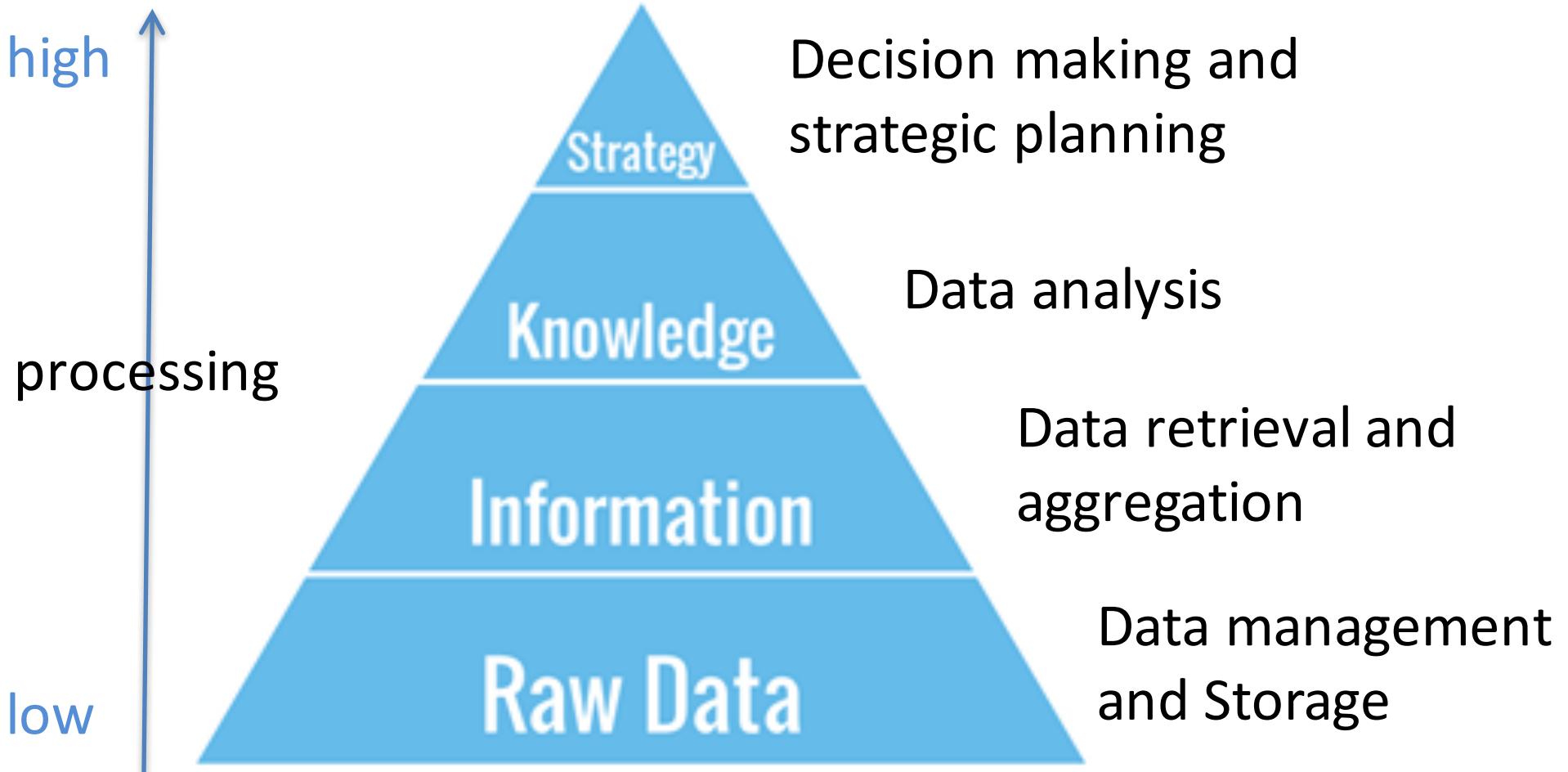
**PETABYTE**  
150 Miles Diameter

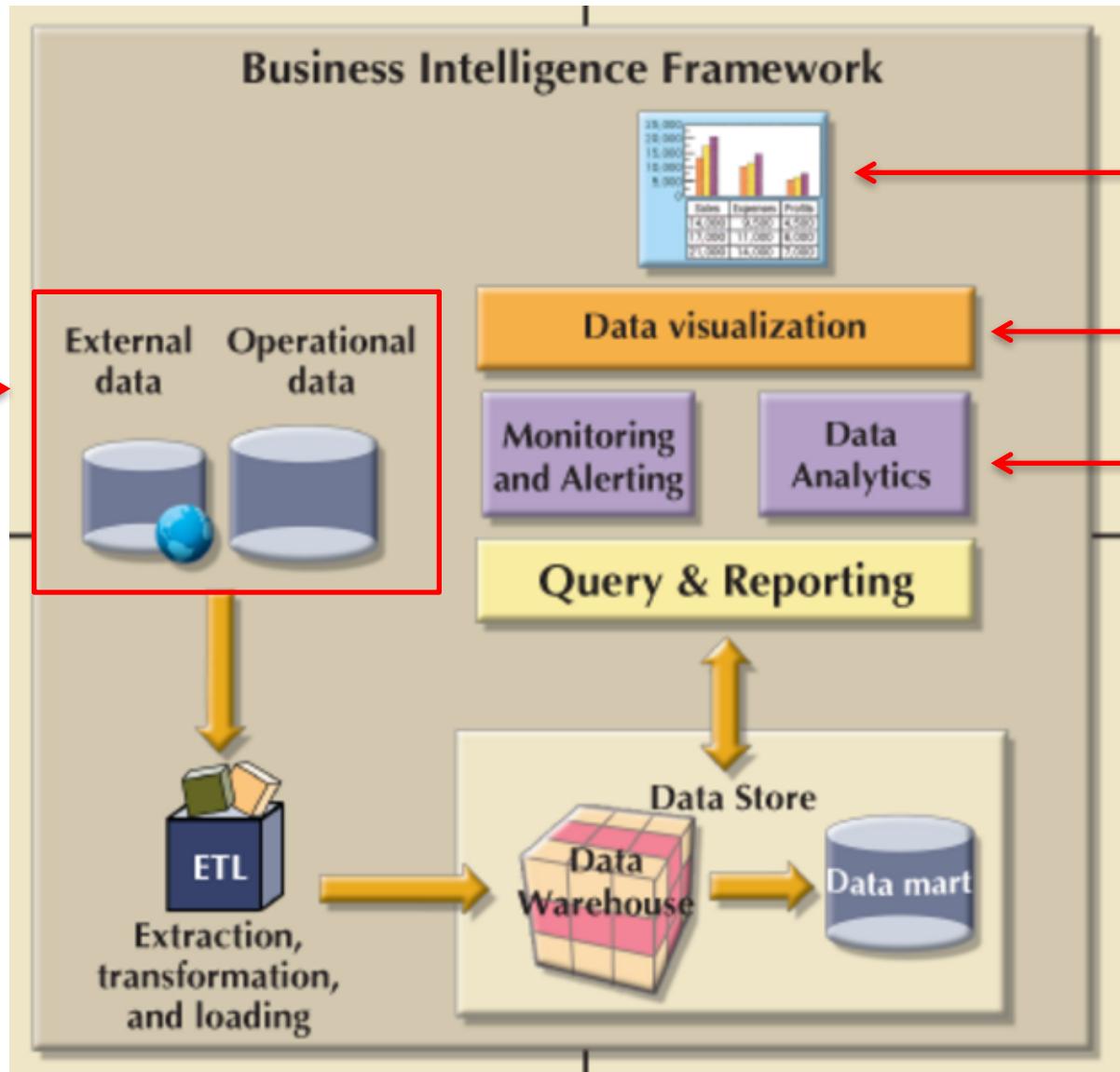


# What is database

- A **database** is an organized collection of data.
- What is data? And why do we need data?
  - Data can be transformed into information
  - We need information to make decision.
  - Data is raw, it's a building block. Information gives meaning and context.

# Business intelligence pyramid





Marketing Strategy,  
Supply Chain  
Management, etc

BADM 395 :  
Data Science  
Analytics

BADM453:  
Decision  
Support  
Systems

# Application areas

- Banking: For customer information, accounts, loans, and banking transactions.
- Airlines: For reservation and schedule information
- Universities: For student information, course registrations and grades.
- Sales: For customer, product, and purchase information

# Application areas

- Manufacturing: For management of supply chain and for tracking production of items, inventories in warehouses, and orders
- Telecommunication: For records of calls, generating monthly bills
- Finance: For storing information about stocks and bonds
- Social Media: For new postings, comments, likes.
- etc

# What does database provide

- Handling large amount of data
- Safe
- Multi-user: concurrency control
- Convenient: high-level query languages

# Why do you need to learn database technologies?

- It plays a critical role for business in “big data” era.
- All modern organizations use database technologies to store and manage data in every functional area of business including its operations, finance, accounting, and marketing.
- You will have one of the most marketable skills to help a business better manage their data and even discover new opportunities through better understanding of the data.
- Even if you are not an “IT” person, your database skills will add significant value to you as an employee.

# You will learn

- **Relational Data modeling (database design)**
- **SQL (query database)**
- NoSQL and Business Intelligence

# You will not learn

- Implement database management software
  - indexing, optimization, distributed transaction, concurrence control

# You will be able to

- Understand and help articulate the data needs of the company
- Conceptually model the relationship of the data
- Implement the database
- Query databases to meet business requirements

# Questions?