



مؤسسة حمد الطبية  
Hamad Medical Corporation  
صحة . تعليم . بحوث  
HEALTH • EDUCATION • RESEARCH

# NURSING INFORMATICS TRENDS

## How Big is BIG DATA?



## My First Computer

IBM

VGA Monitor

256kb RAM

1MB Hard disk

Intel Processor 8088

CD-ROM drive

Floppy 3.5 inch diskette drive

MS-DOS

Windows 3.14

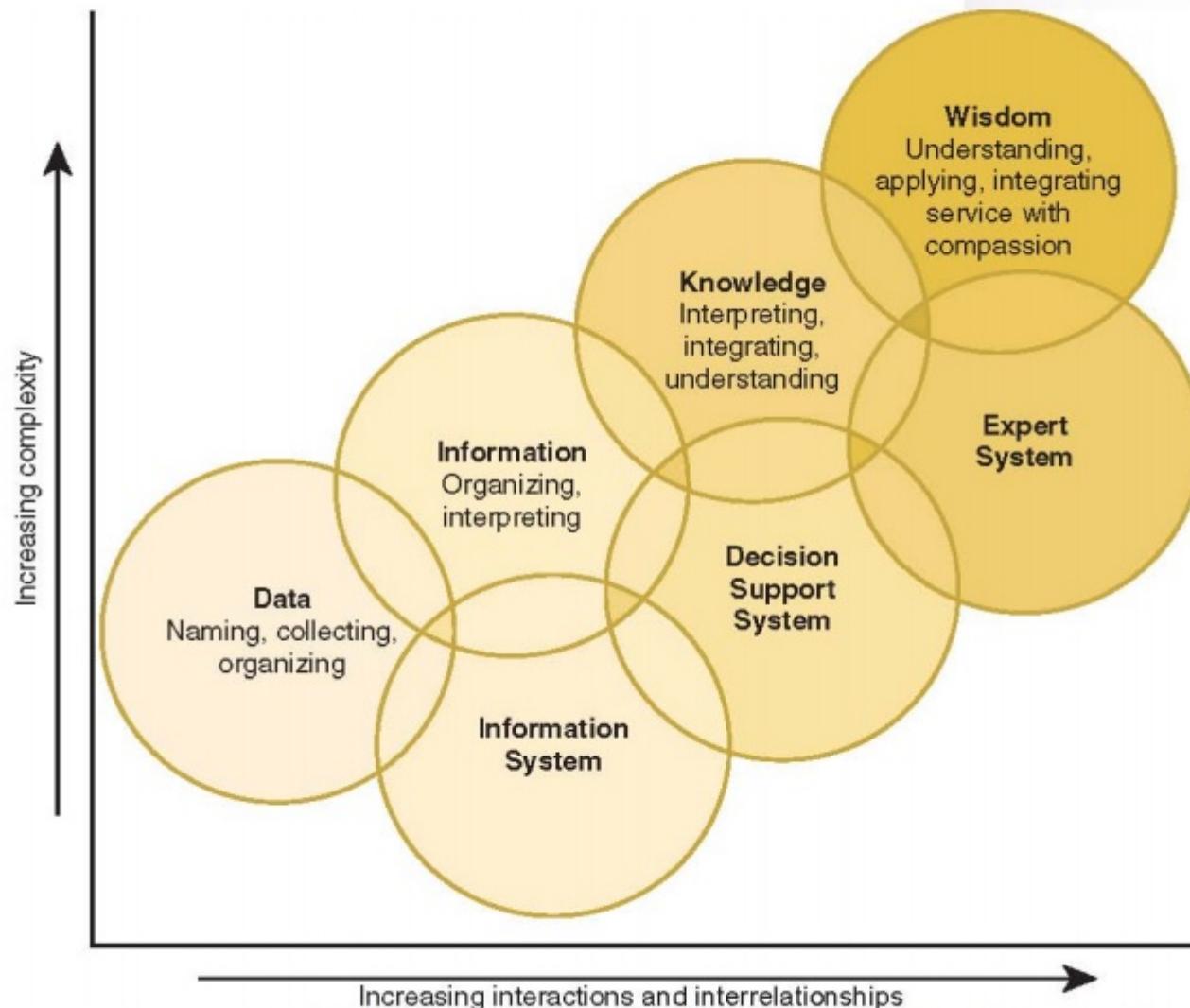
"640KB ought to be enough for anybody." (allegedly)

- Bill Gates 1981

# OBJECTIVES

1. Define what is Big Data
2. Sources of Big Data
3. Benefits of Big Data

# Moving from Data to Expert Systems



Model/Image by from: Ramona Nelson Ramona Nelson Consulting at [ramonanelson@verizon.net](mailto:ramonanelson@verizon.net).  
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# BIG DATA:

to the size of a data set that has grown too large to be manipulated with traditional methods



# Traditional Way:

Excel - 1,048,576 (65,536) rows by  
16,384 (256) columns

Access Database – limit is 2 GB

SQL – MySQL



# Characteristics of BIG DATA:

Volume – Data Quantity

Variety – Data Type

Velocity – Data Speed

Veracity – Data Quality

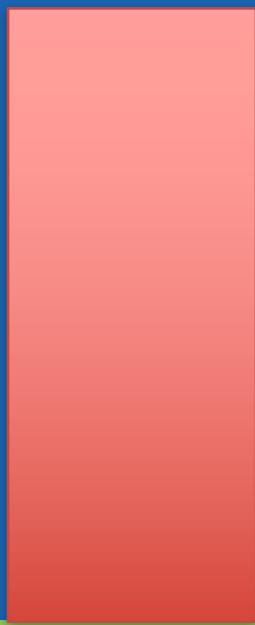
Value – Data Impact

# Volume

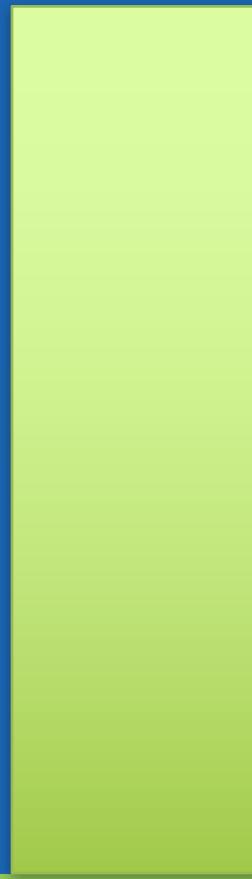
Pettabytes  
 $10^{15}$



Exabytes  
 $10^{18}$



Zettabytes  
 $10^{21}$

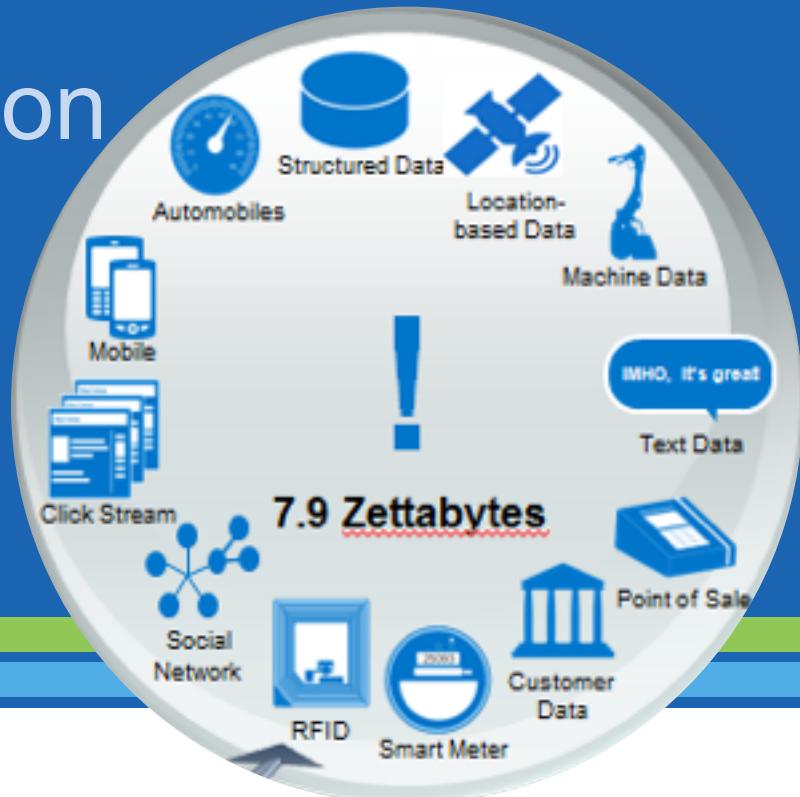


# Variety

Diverse resources

Does not fall into relational structures

Not ready for integration



# Velocity

The rate at which data flows into the organization grows exponentially

2.3 trillion GB are being generated daily to data centers



# Veracity

Inaccuracies when generated  
Meaning lost in translation



# Value

Data – information – insights

Value to patients, caregivers and other stakeholders

Value = Quality/ Cost



# Sources of BIG DATA:

Clinical Research Data

Biometric Data

Machine to machine data

Transactional data

Web and Social Media data

# Clinical Research Data

Structured or Unstructured

Sources

EMR

Email

Paper documents

Clinical Trials



# Biometric Data

Genomics

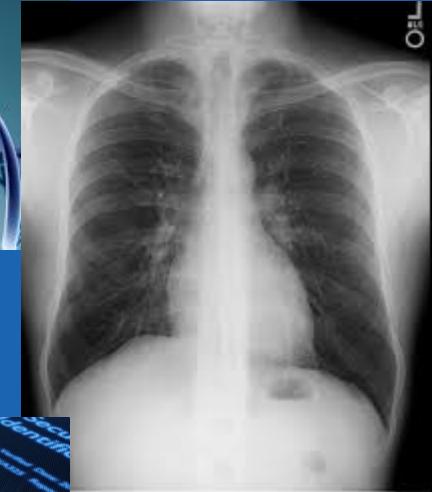
Fingerprints

Biometric scans

Images

Radiographs

Medical Images

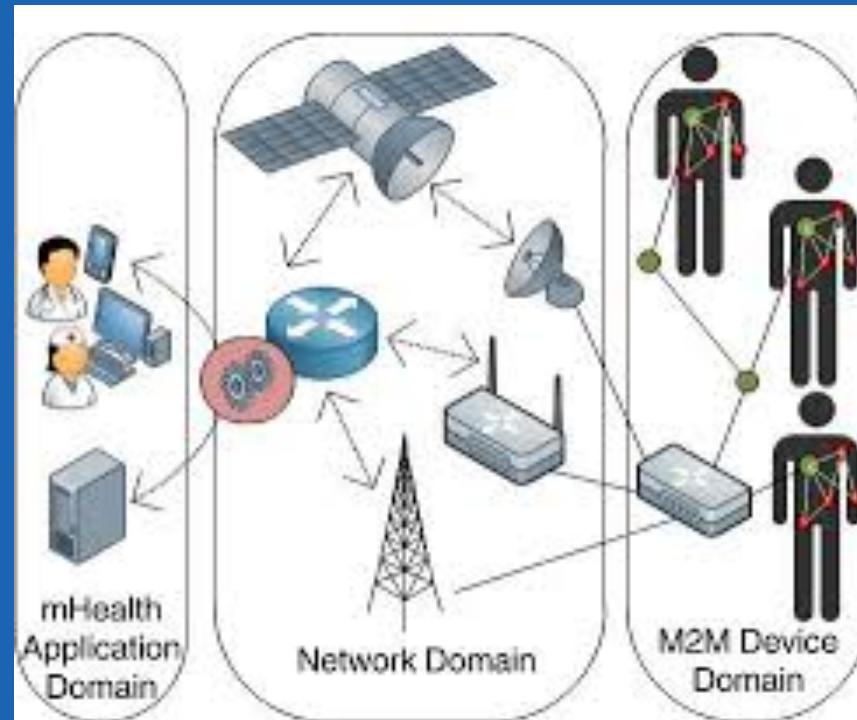


# Machine to Machine Data

Personal devices

Sensors

Meters



# Transactional Data

Financial transactions

Claims data

Billing records

Credit card transactions

Sales data



# Social and Web Data



Clickstream & Interaction

Facebook, Twitter, blogs

Web search, websites

mHealth/ mobile



# Benefits of BIG DATA:

Comparative Effectiveness  
Research  
Clinical Decision Support Systems  
Data Transparency  
Remote Patient Monitoring  
Analytics



# Comparative Effectiveness Research

Big Data can be leverage to:

Standardize care

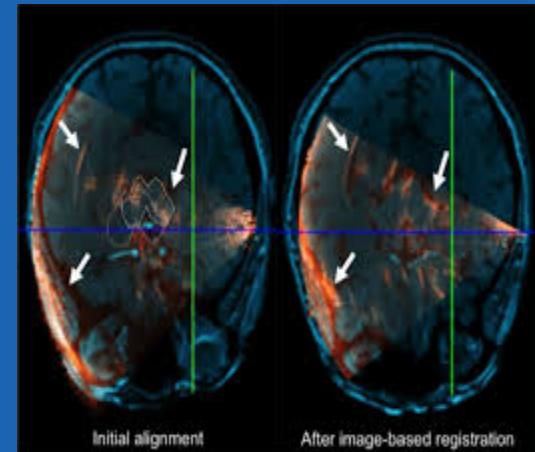
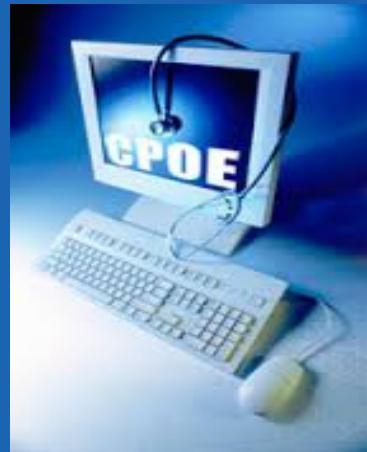
Reduce variability

Eliminate regional cost



# Clinical Decision Support

Caregivers



Patients



# Data Transparency

Patients  
Providers



Vs



# Remote Patient Monitoring



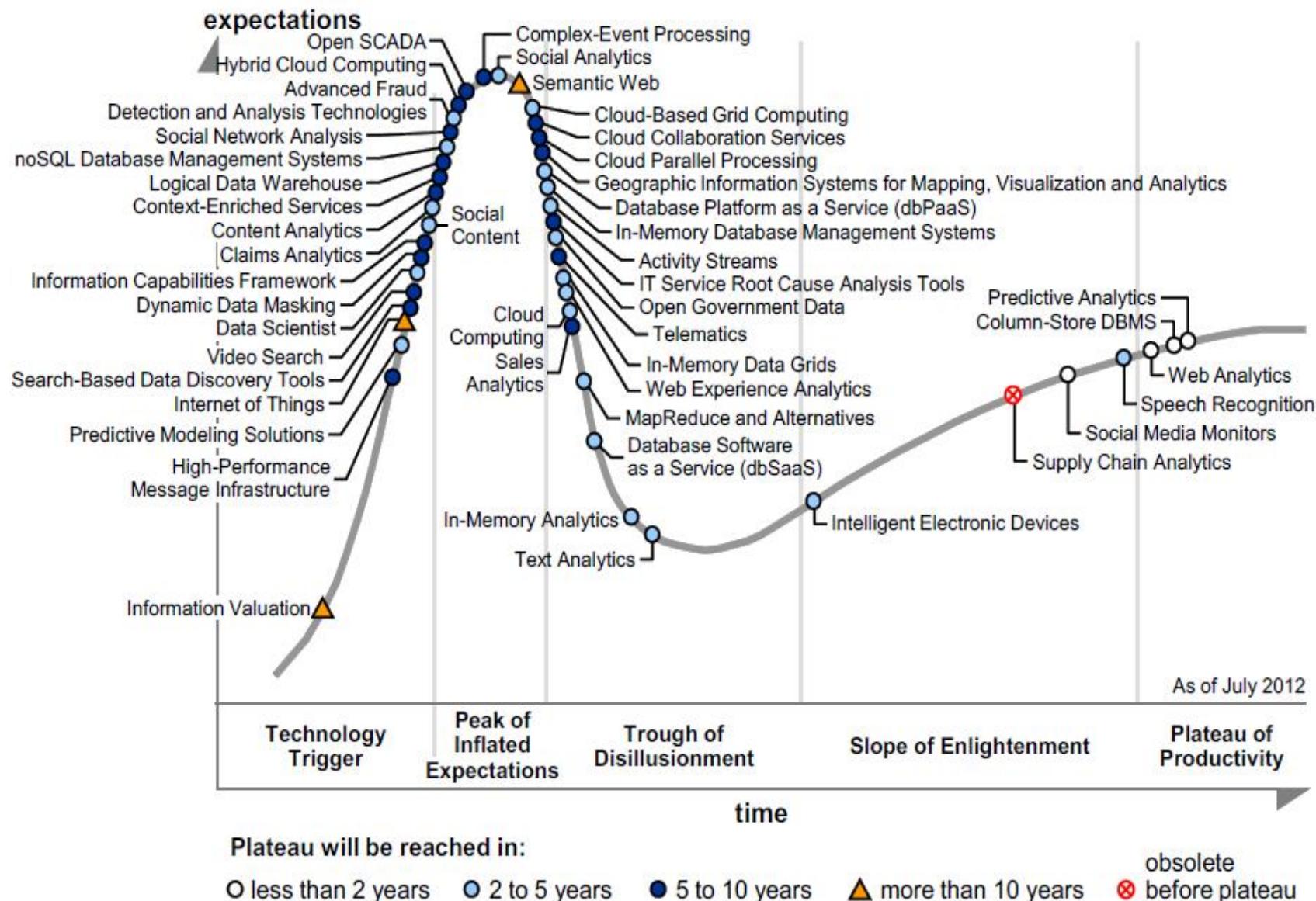
- 150 million US patients with chronic disease, 80% cost
- Monitor patient adherence
- Improve future treatment options
- Reduce LOS, ED visits, long term sequale of chronic disease

# Analytics

- Segmentation
- Predictive modeling
- Measure success



Figure 1. Hype Cycle for Big Data, 2012



Source: Gartner (July 2012)



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# THANK YOU!!!

