
# INFO90002 Database Systems and Information Modelling

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Business Analytics
Data Warehousing

# Agenda

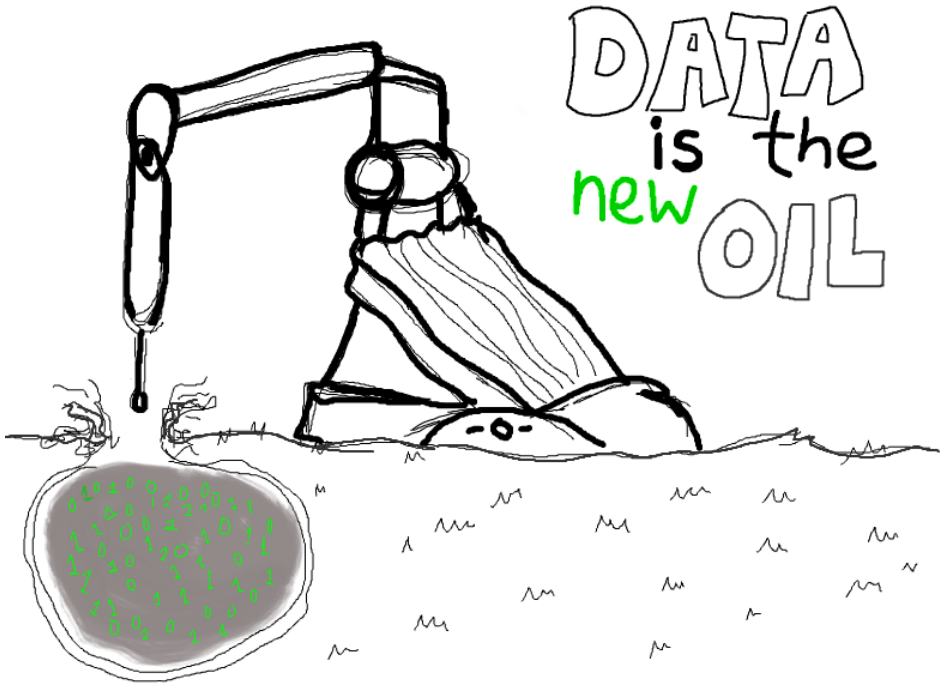
1. Overview of business analytics
2. Business value of analytical systems
3. Overview of data warehousing
4. Career opportunities

# Business analytics - Definition

Where is the information?
Lost in the data.
Where is the data?
Lost in the database.

Joe Celko

- Strategic perspective
  - Use data to make informed decisions
- Tactical perspective
  - Reporting and analysis



# Business analytics and competitive advantage

Value work flow of business analytics

Turning data  Into insights  Into action

**Analytical Capabilities:** Valuable, Rare, Inimitable, Non-substitutable

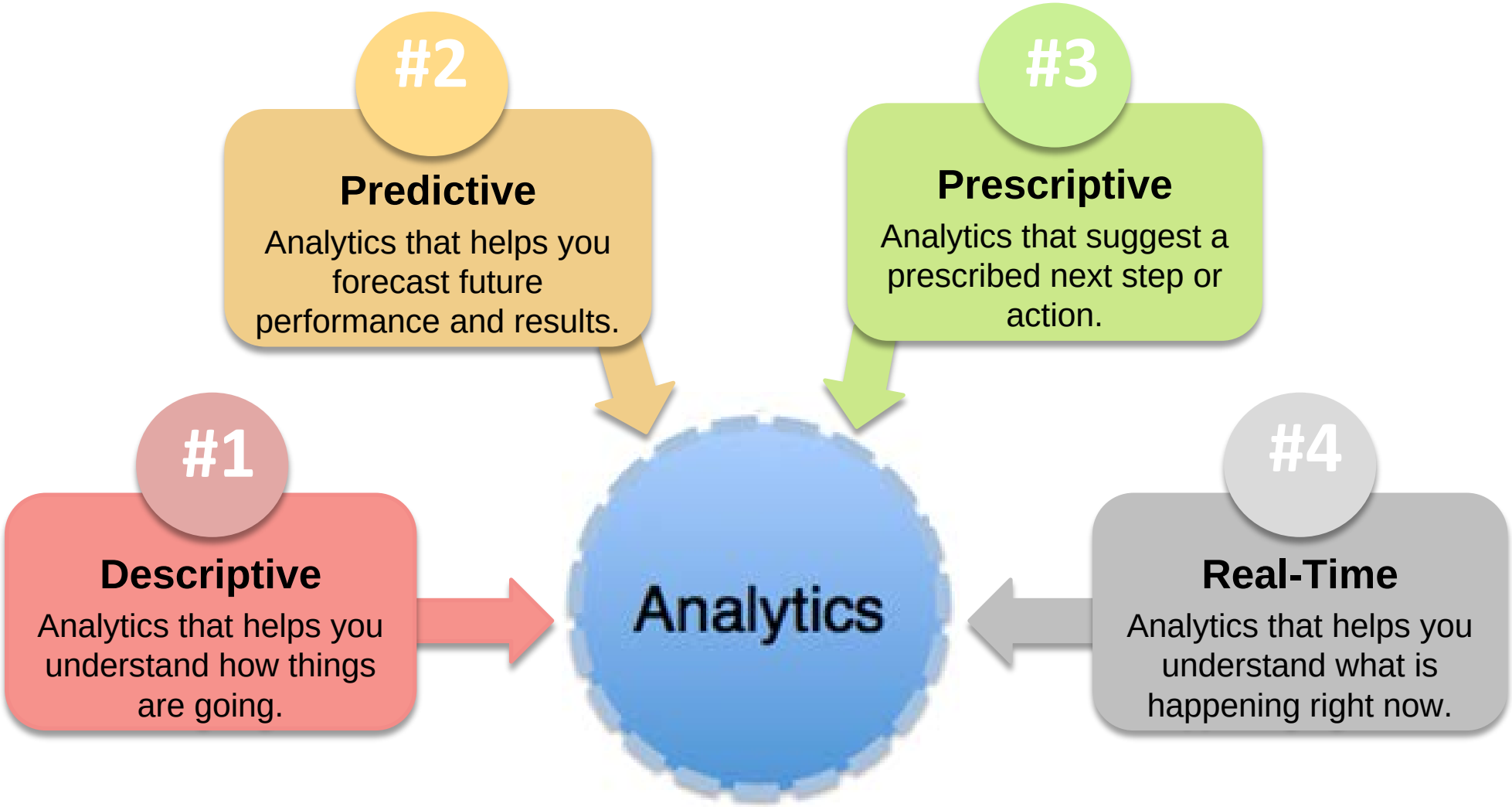
Marketing analytics

Customer analytics

Supply chain analytics

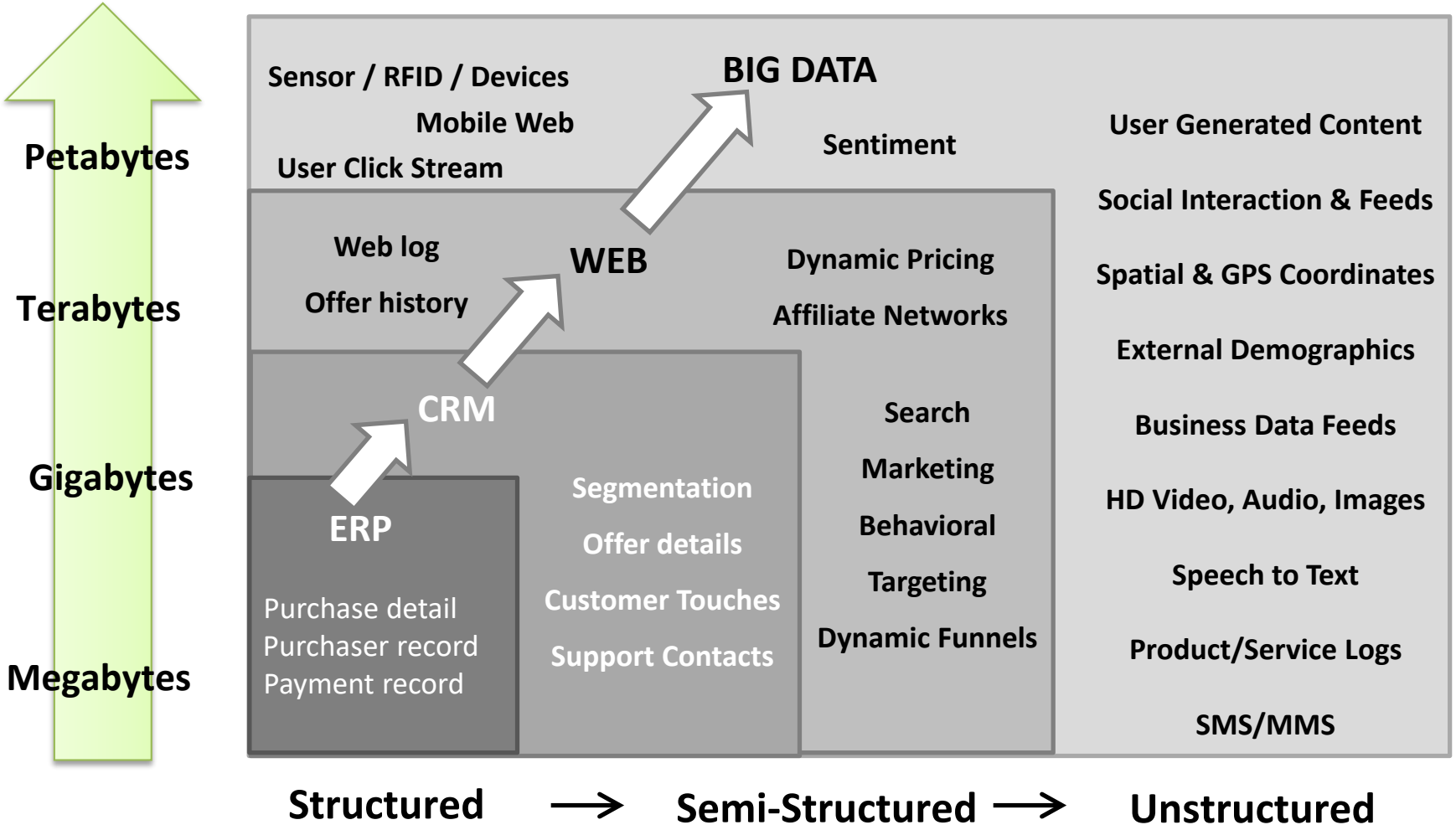
Cybersecurity analytics

# Types of business analytics



# Data and analytical applications

## Big data = Transactions + Interactions + Observations




Source: Connolly (2012)

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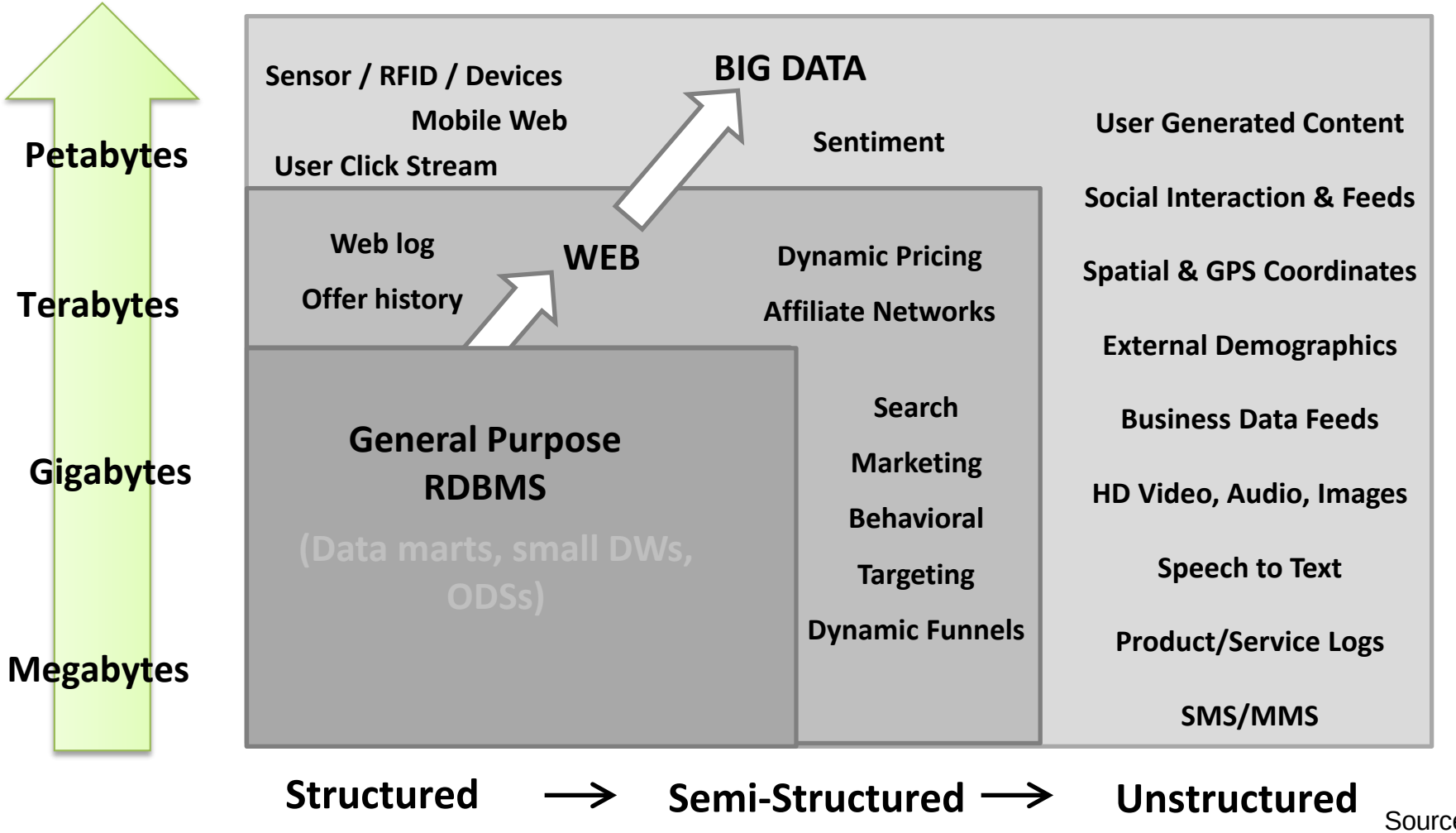


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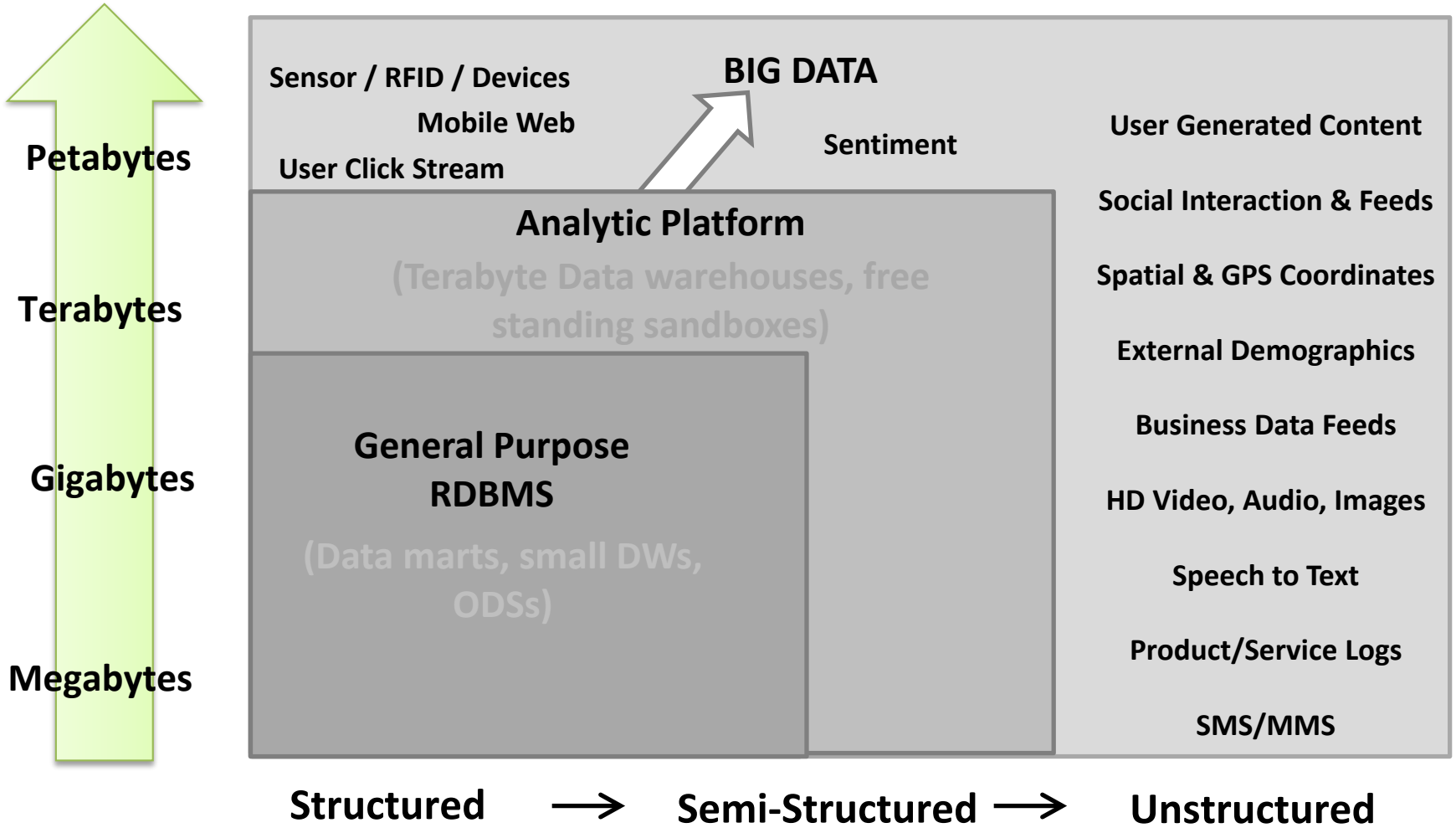


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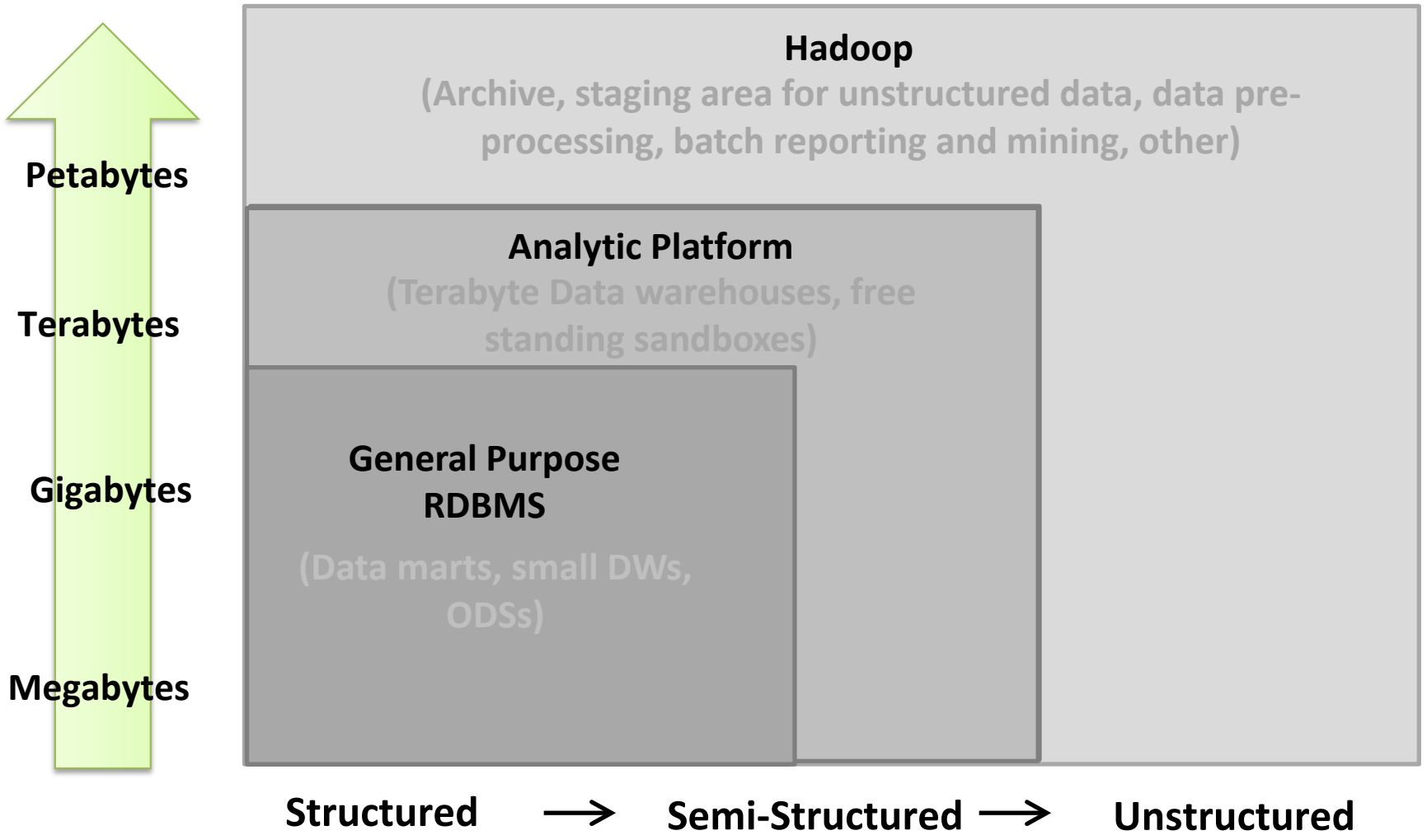
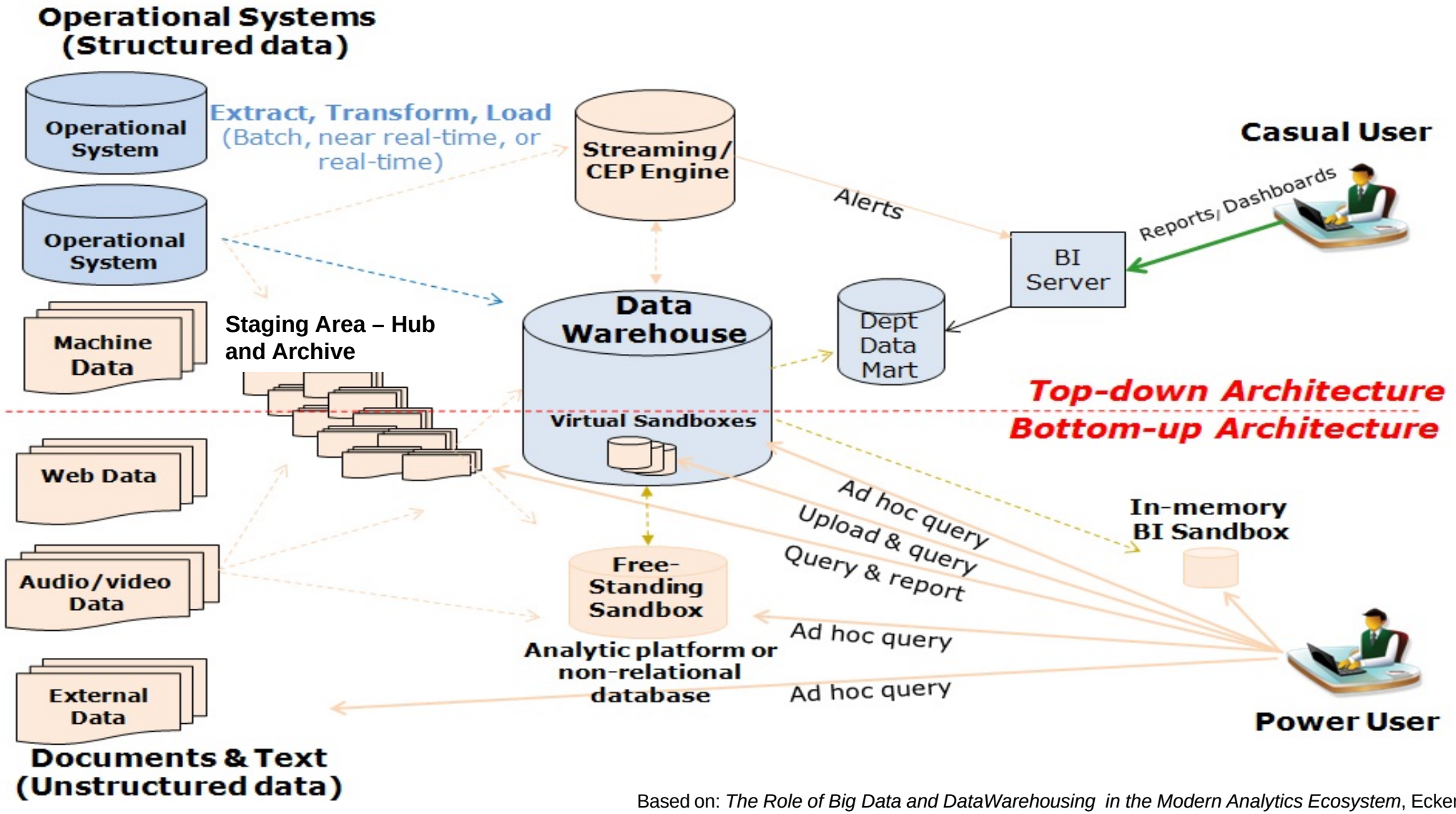



Source: Connolly (2012)

# Conceptual architecture – Analytical ecosystem



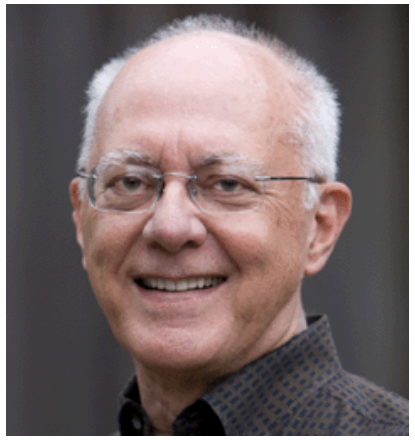

Based on: *The Role of Big Data and DataWarehousing in the Modern Analytics Ecosystem*, Eckerson, 2018


# Data Warehousing - Overview

# Data warehouse - Definition

Bill Inmon

"A data warehouse is a subject-oriented, integrated, time-variant and non-volatile collection of data in support of management's decision making process". (Inmon, 2005)



Ralph Kimball

"A data warehouse is a copy of transaction data specifically structured for query and analysis". (Kimball and Ross 2013)

# Database vs data warehouse

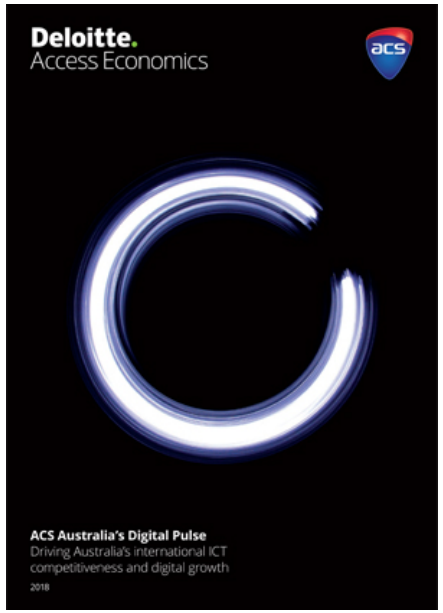
| | **Database** | **Datawarehouse** |
|---|---|---|
| Purpose | Data insertion, updates and management | Data analysis and decision making |
| Systems/ Applications | Online transactional processing systems | Analytical information processing systems |
| Format | Normalized<br>Relational database<br>Lowest level of granularity | Denormalized and integrated<br>Subject oriented<br>Granularity level depends on the subject |
| Time Frame | Current/real-time | Historical |
| Indexes | Hardly any | Many |
| Data Aggregation | Rare | Common |

# Data Warehouse – Subject overview

- Data warehouse management
- Data warehouse architectures
- Warehousing data modelling and database design
- Data integration
- Data warehouse development activities
- Tools and technology types

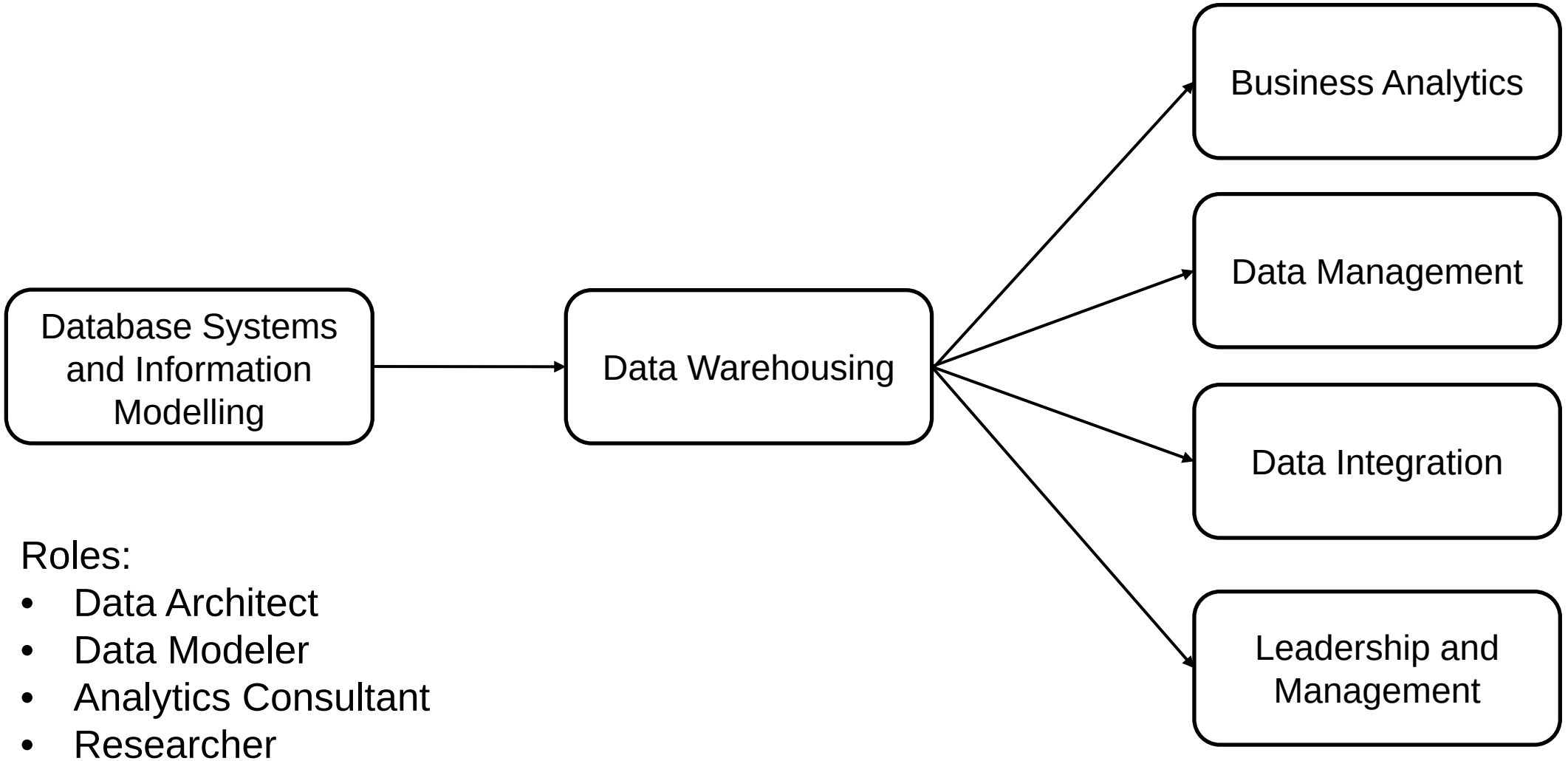
# Career opportunities

- According to *Australia's digital pulse* (2018) *report*, there is a prediction that there is a potential shortfall of over 80,000 jobs in the next five years. Many of these jobs are in the areas of business analytics and artificial intelligence. This presents a great opportunity for innovation for those organisations able to develop the requisite capabilities by attracting highly competent people in these areas.




Source: https://www.acs.org.au/content/dam/acs/acs-publications/aadp2018.pdf

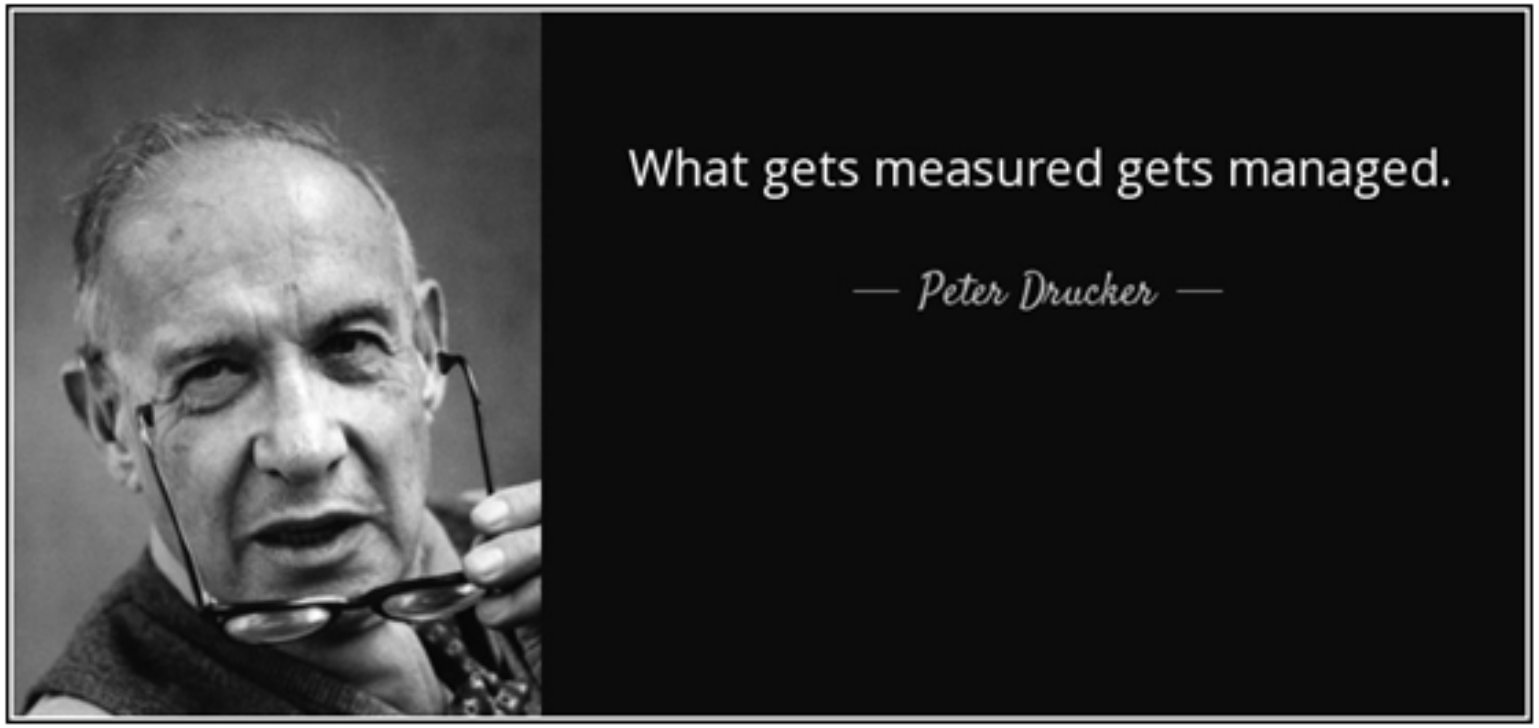
# Career pathway




Roles:

- Data Architect
- Data Modeler
- Analytics Consultant
- Researcher

# Summary




# Questions??