

# INFO5990: Professional Practice in IT

## Week 12: Decision Making

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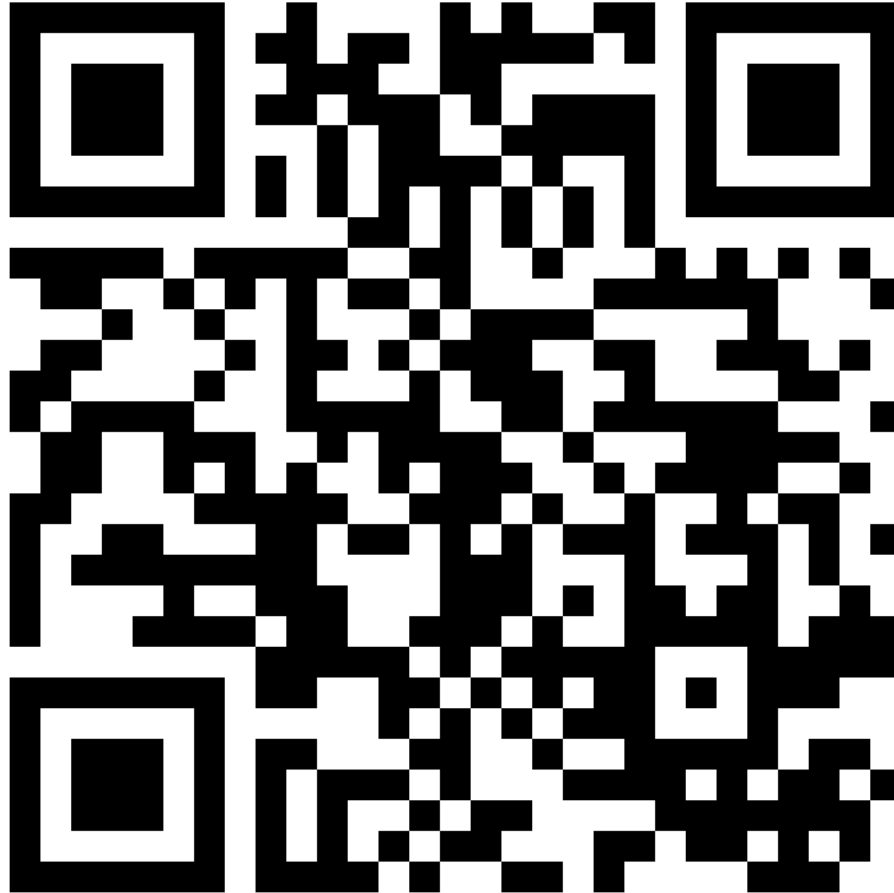
THE UNIVERSITY OF  
SYDNEY

“The risk of a wrong decision is preferable to the terror of indecision”.

*Maimonides*

“A stupid person is someone who has the facts, who has the proper information, and still makes the wrong decision”.

*Daryl Davis*



# Decision Making

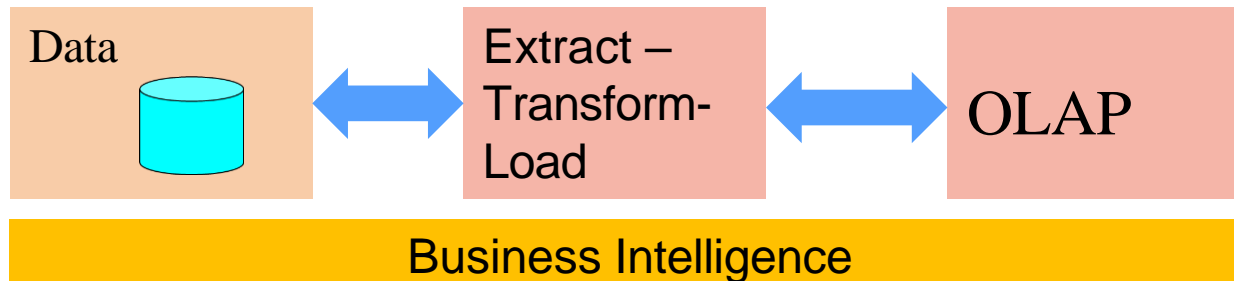
- What is a “Business Decision”
- What process is used to make a decision?
- What tools might help in decision making?

*Consider an example of a national gardening company?  
They want to open three new franchises.*

*How do they decide where these should be located?  
How do they later decide whether the new franchises are a success?  
How do they tell, as early as possible, if any of them have potential problems?*

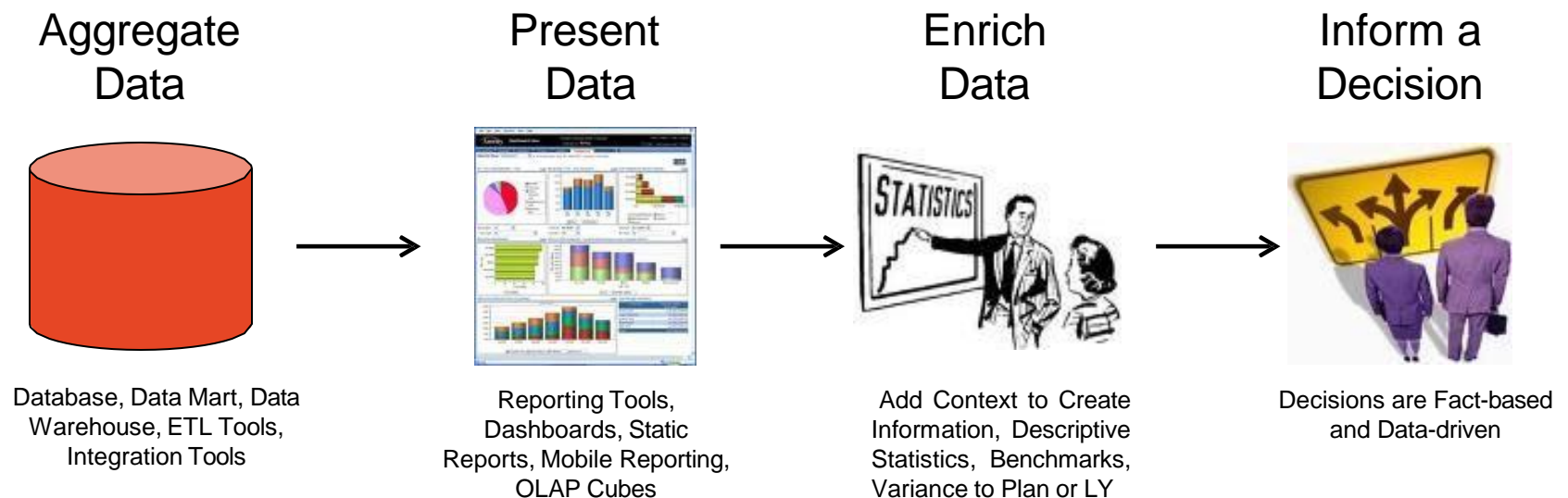
# Business Decision Making / Support

- What is Business Intelligence?
- Data
- Business Intelligence Tools (ETL)
- Online Analytical Processing (OLAP)

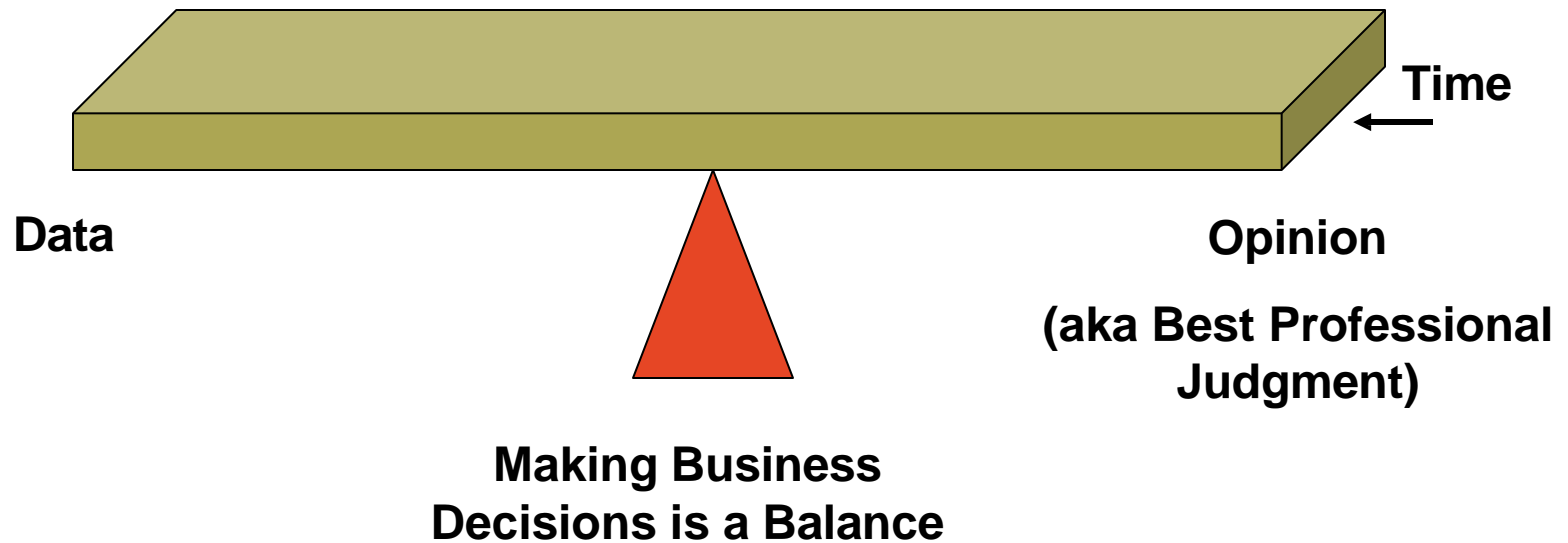


# What is Business Intelligence?

Business Intelligence enables the business to make intelligent, fact-based decisions



# Why is Business Intelligence So Important?



In the absence of data, business decisions are often made by the HiPPO\*.

With **Business Intelligence**, you can get data in a timely manner.

\* HiPPO = Highest Paid Person's Opinion

# Unstructured Text Processing



# Business intelligence tools





# Four key components of a BI system

1. data warehouse containing both internal and external data
2. business analytic tools for manipulating, mining, and analyzing data
3. a set of business performance indicators for monitoring and analyzing performance
4. user interface



Source: [www.evolveit.com](http://www.evolveit.com)

# Benefits of business intelligence tools

- ‘One version of the truth’ – a single, reliable presentation of corporate information
- Alignment of an organization around a consistent set of Key Performance Indicators (KPIs) and Metrics
- Integrated access to multiple data sources (ERP, CRM, Spreadsheets, Budgets, etc.)
- Faster collection and dissemination of information.
- Simplified graphical presentation of KPIs and metrics
- Quicker, better, fact-based decision making

## To summarise - BI

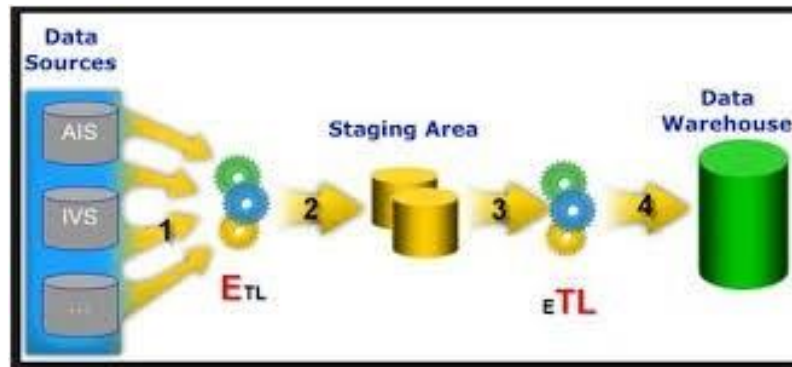
A Business intelligence system provides accurate information when needed....

about the organisation and its environment,  
including a (nearly) real-time view of  
corporate status and performance

# ETL tools:

## Extract-Transform-Load

- Extract data from multiple diverse data sources including those outside the organisation
- Transform data to fit operational needs, including ‘cleansing’ (quality)
- Load data into target database, data mart or data warehouse
- ETL ‘World Record’:  
5.4 TB data loaded in Under 1 Hour (Syncsort)

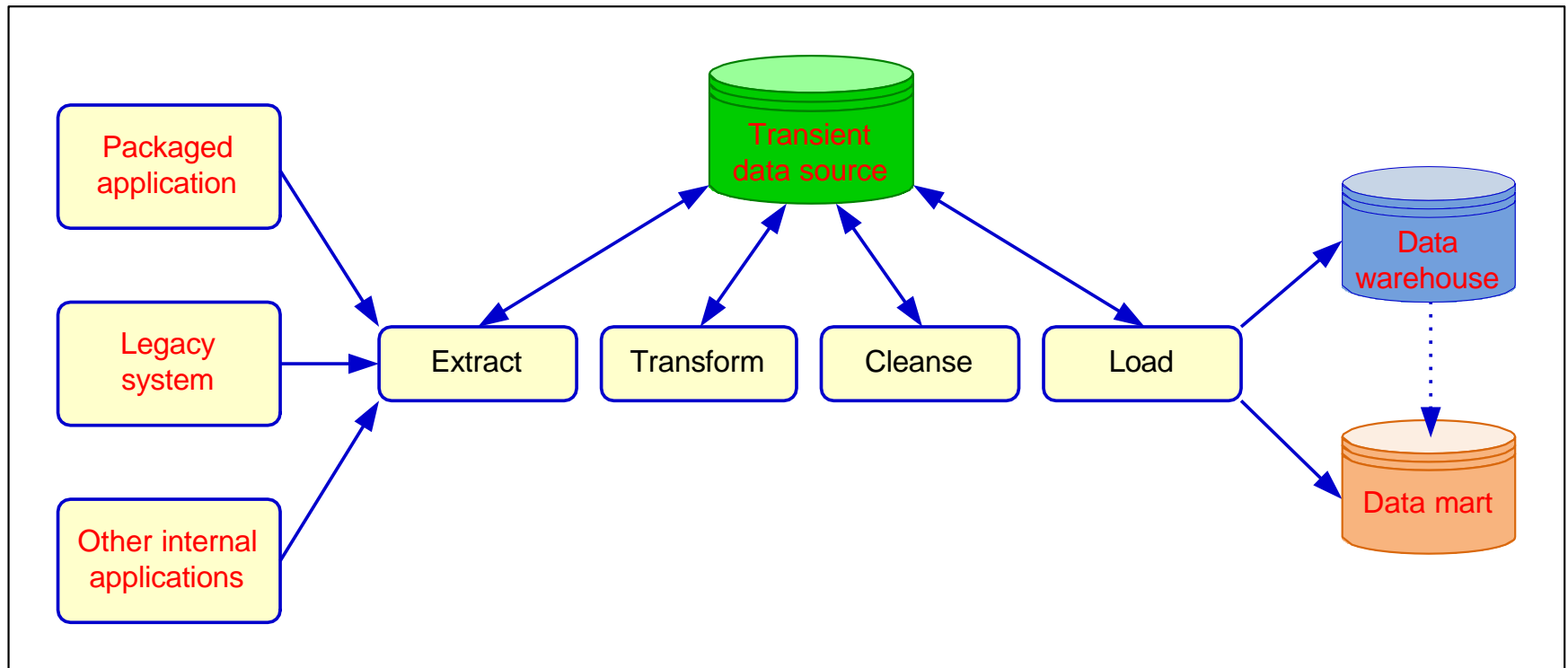


Source: intellipant.com

[Click here for Intricity ETL tool \(4:59\)](#)

# Data Integration

## The Extract, Transform and Load (ETL) Process



# Data Warehouse

- A physical repository where relational data are specially organized to provide enterprise-wide, cleansed data in a standardized format
- “The data warehouse is a collection of integrated, subject-oriented databases design to support DSS functions, where each unit of data is non-volatile and relevant to some moment in time.”

# Benefits of a data warehouse

- One view of the corporate data
- Allows end users to perform extensive analysis more efficiently
- Allows a consolidated view of corporate data
- Better quality data
- More timely information
- Enhanced system performance
- Simplified data access

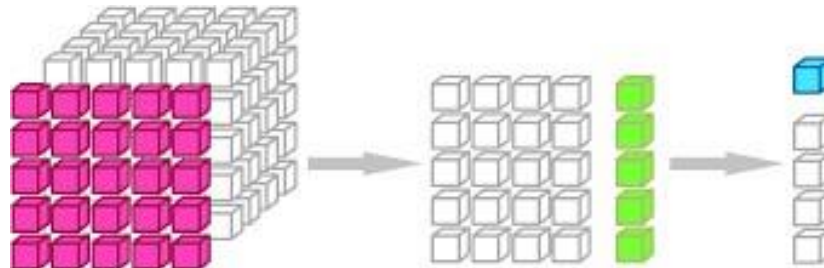
# Online Analytical Processing (OLAP)

- Provides advanced tools for decision making
- An approach to answering ad hoc multi-dimensional analytical queries
- Part of the broader field of 'business intelligence'
- Incorporates reporting and data mining



# The OLAP cube

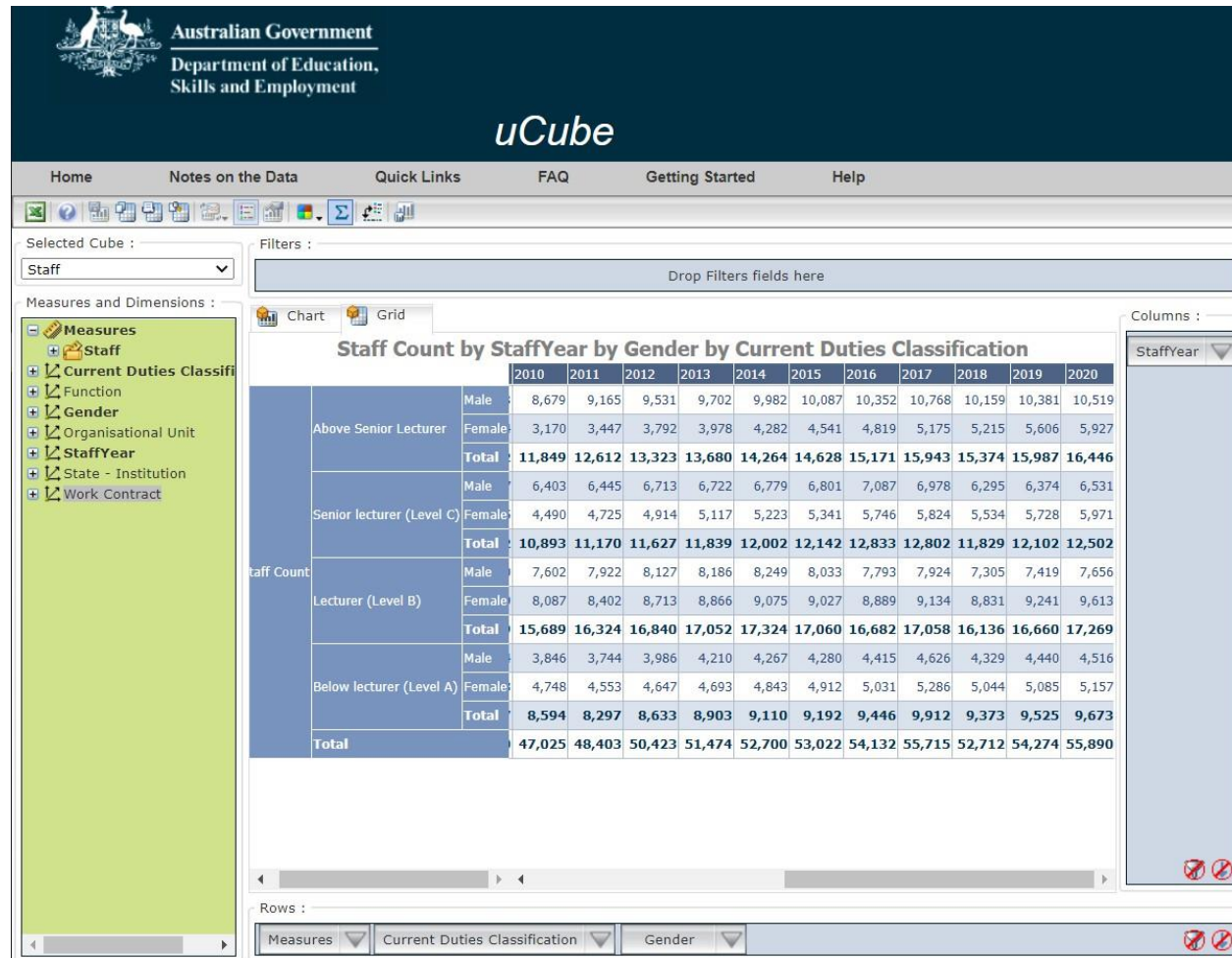
- ‘OLAP cube’
  - a generalisation of a two-dimensional spreadsheet
  - an array of data of three or more dimensions
  - *multidimensional dataset*
  - sometimes then called *hypercube*



[www.jcount.com](http://www.jcount.com)

# Example

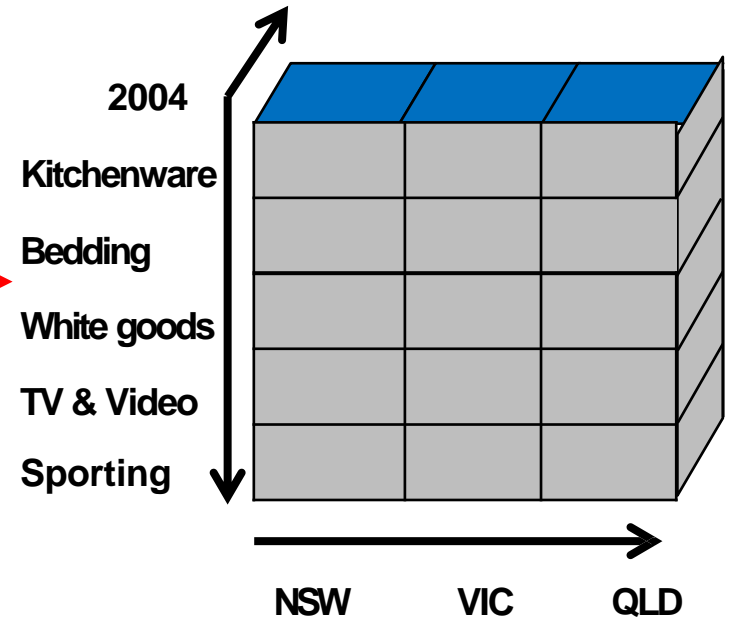
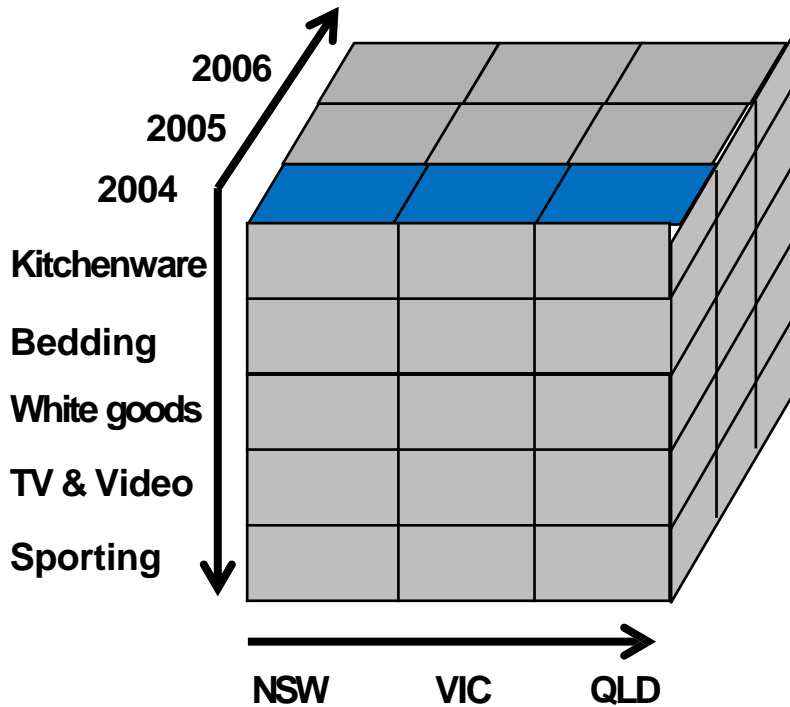
- <http://highereducationstatistics.education.gov.au/>



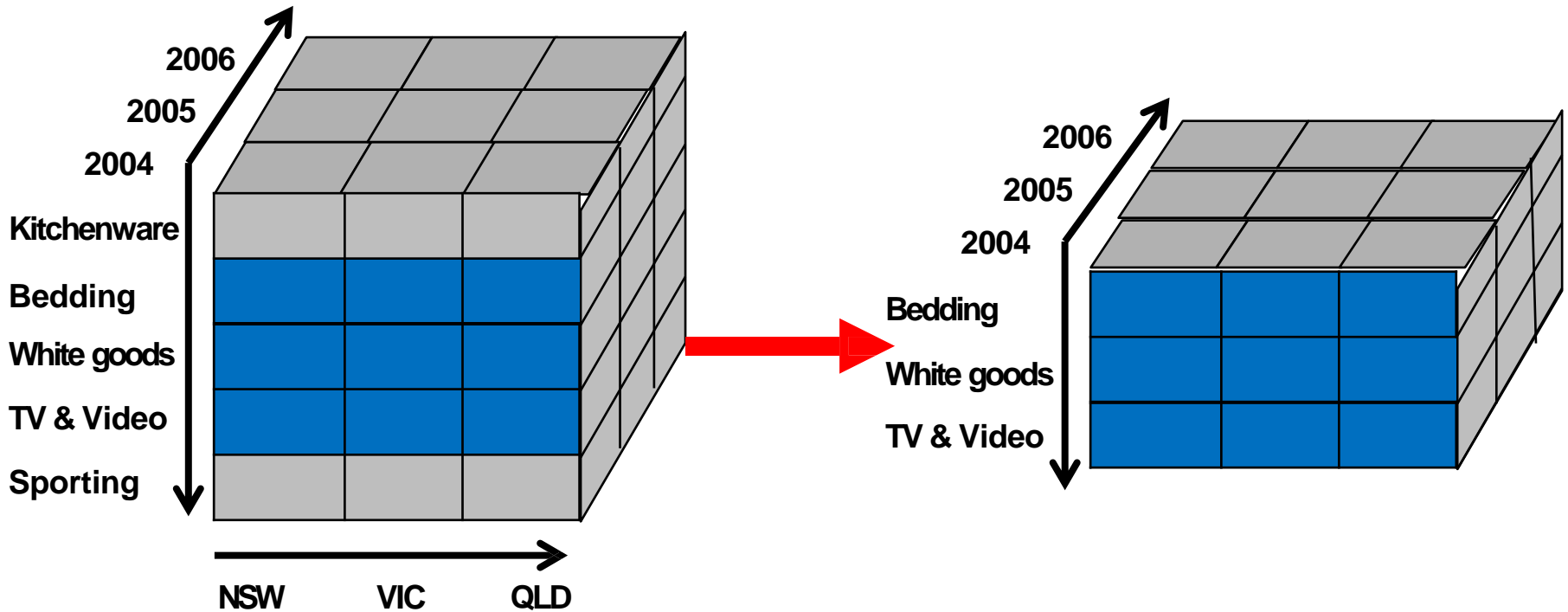
# OLAP operations

1. Slicing
2. Dicing
3. Drill down
4. Roll up
5. Pivot

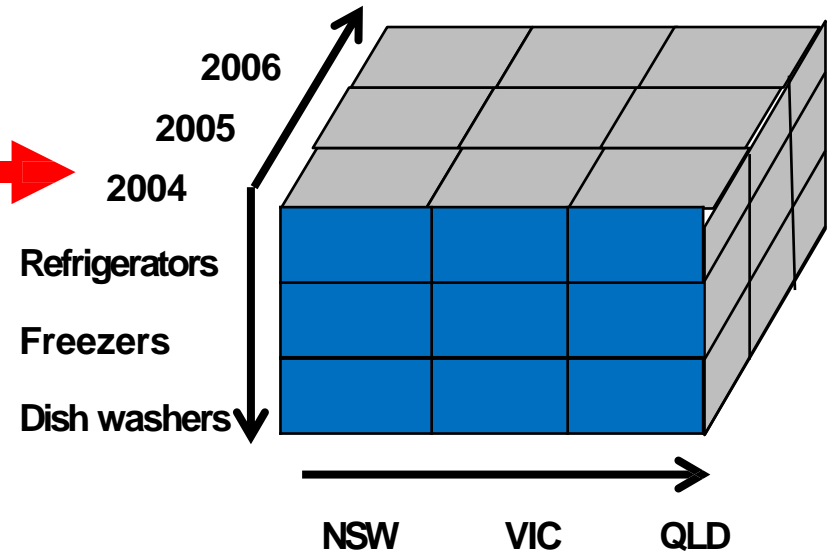
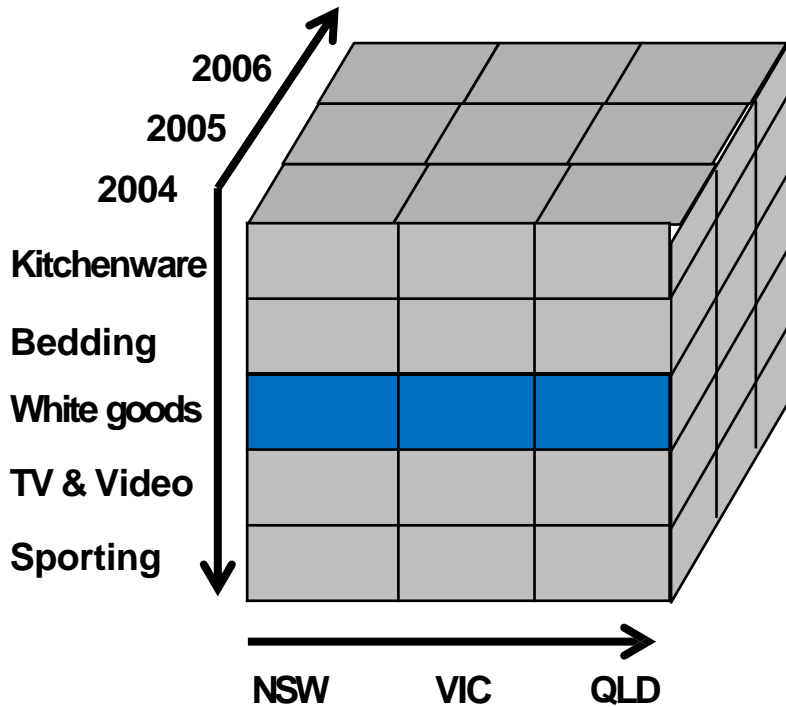
# Slicing



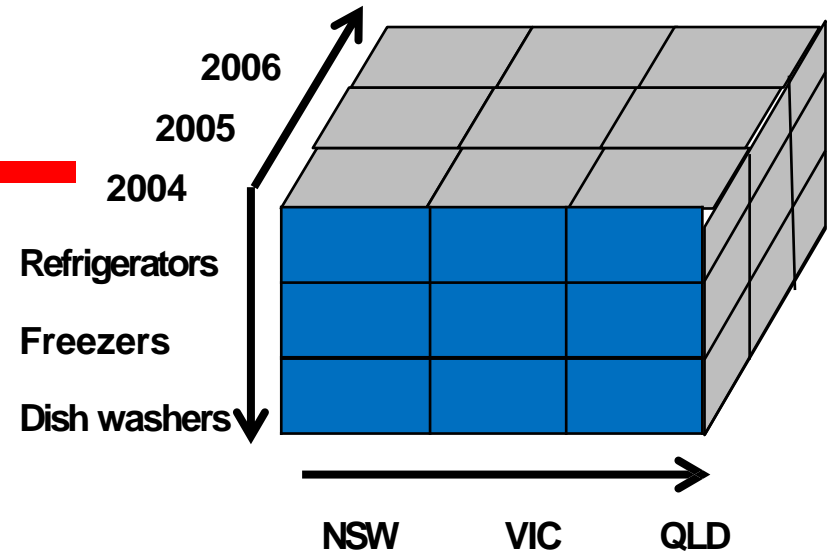
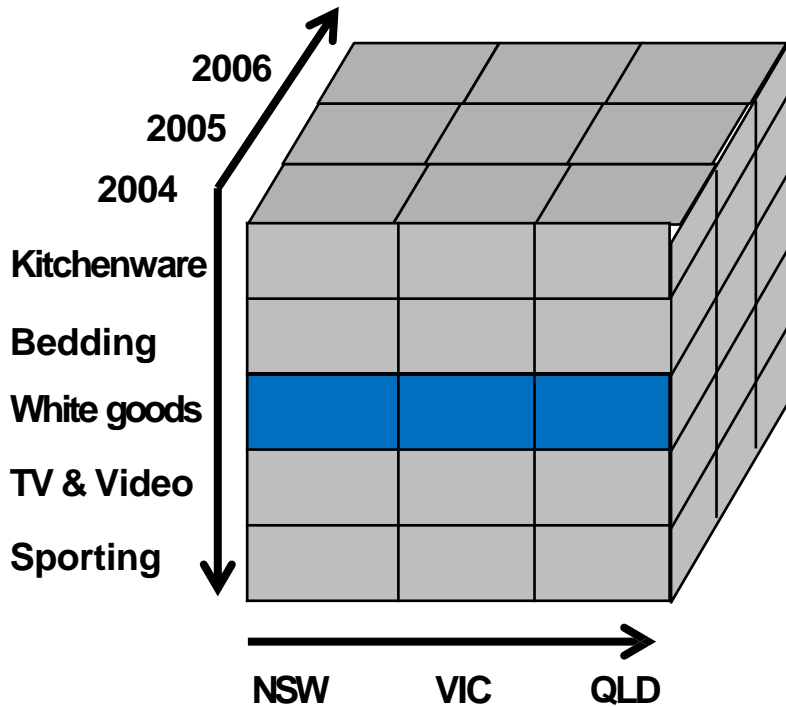
# Dicing



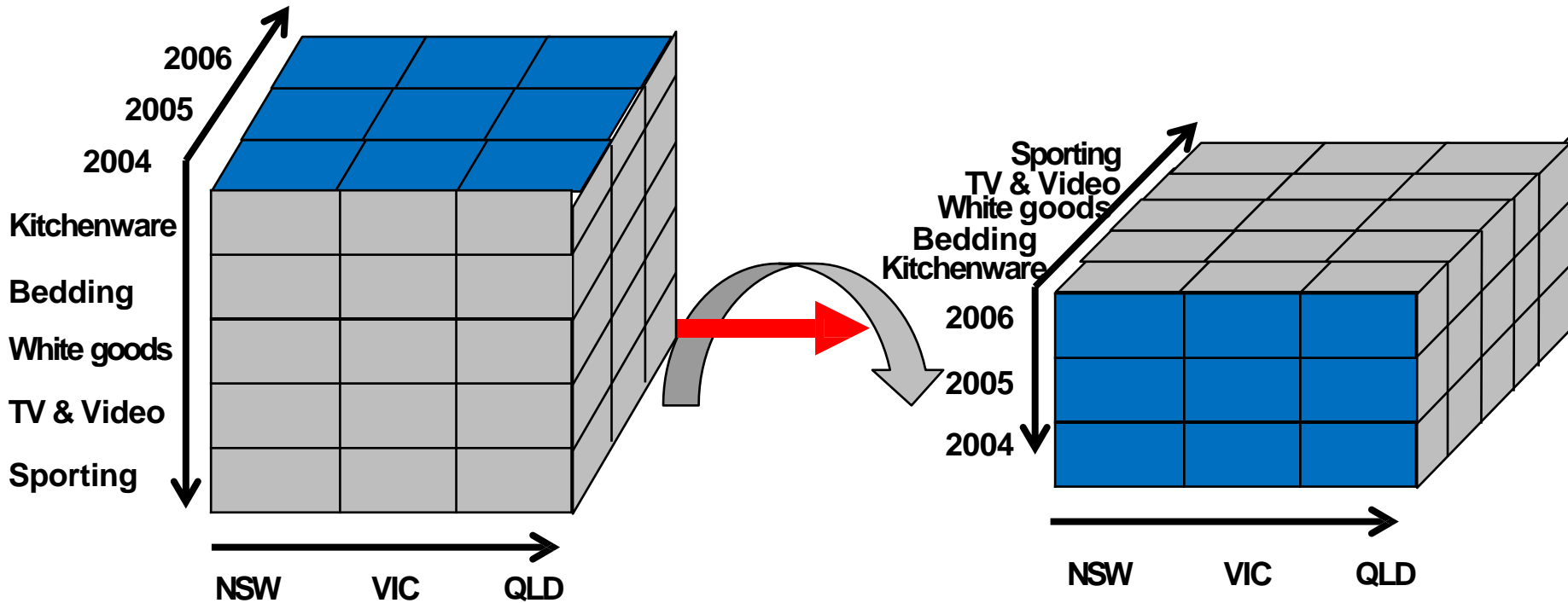
# Drilling down



# Rolling up



# Pivoting





# What's next?



Unstructured data Big data

<https://www.altexsoft.com/blog/unstructured-data/>

# Unstructured data

- 85 percent of all business information exists as unstructured data
  - news, reports, letters, e-mails, memos, notes from call centres or customer support, user groups, chats, surveys, white papers, marketing material, research, PowerPoint presentations, Web pages



source: restructured.com

<https://kx.com/blog/unstructured-data-improves-insights/>

# Decision Making

## SCENARIO

Jim's Mowing wants to open three new franchises. They already know that some of their existing franchises are very successful and other struggle (for various reasons).

The company board is considering where the three new franchises should be located and has a list of 20 possible locations. The CEO of the company has asked you for an analysis of the data that might help decide which locations would be the most profitable.

# Decision Making

## DECISION MAKING

- Identify the problem.
- What are the company's choices?
- Gather information:
  - What information should the company gather that would be helpful to know before making a decision?
- Consider the outcome.
  - What would be the results of the decision?
- Make the decision.
  - What should the company do?
- Evaluate your decision.
  - Why do you think this is the best decision possible?

# What information might be useful?

- Existing business data
  - Store locations (current and potential)
  - Customers
  - Frequency of pool servicing
  - Profitability
- Relevant demographic data
  - Population density
  - Numbers of pools
  - Climate/weather
  - Socio-economic status
  - Number of trees
  - ...

- <http://highereducationstatistics.education.gov.au/>
- Questions
  - Are there gender imbalances in academic staffing?
    - FT vs PT
    - What about different disciplines?
    - What about promotion prospects?
  - How reliant is Australia on international students?
    - What about different disciplines?
    - What about different degree levels?
    - What about gender?
    - What about location?

## Week 13 – Exam review

Essential information regarding the examination will be shared in next week's lecture



# Questions