



# **2010 AAIR DWSIG 'New Directions in Business Intelligence'**

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# Topics

Social media

Strategic Planning

Predicting student behaviour

Customer Relationship Management

Identifying students at risk

Customer segmentation

Advanced / Predictive Analytics

Target marketing

Geo-coding for Low-SES

Location intelligence (i.e. mapping)

Planning, Budgeting and Forecasting





## Context

Not all of these topics follow everyone's definition of pure Business Intelligence, and certainly diverges a lot from simple Data Warehousing principles.

I believe various business processes (analytics, planning, etc.) are so dependant upon effective BI, that a more holistic perspective is beneficial (and should have inter-dependant strategies).

Most people's views towards the role of BI are slowly changing.





## Context

A lot of discussion in the BI space has moved well beyond data warehousing and simple BI (eg. standard and ad hoc reporting), and can benefit a huge range of strategic, tactical and operational business processes.

Some of the topics I'll discuss are already being performed by some of your universities in one way or another – but I'll bet they are not tied together by a common or linked strategy or approach – or necessarily being done robustly.



# Remember the Principles of BI

Altered definition of BI given by Gartner:

*‘Now, Business Intelligence is becoming the term to describe the enterprise-wide discipline of using data, analyzing information, making decisions and managing performance’*

Or another more general, older one: (i.e. old DSS era)

*Providing people with information needed to make effective decisions*

Quite wide-ranging statements in reality!





## Context

BI Technology is expanding in scope, and is increasingly being used to solve a greater number of business problems.

What are some of those problems?





# 1. Strategic Planning

Does your organisation have a strategic plan?

Does it cascade to faculties and divisions?

- Setting measurable strategic goals and targets for the university at multiple levels
- Identifying Key Metrics / Performance Measures / Indicators

Goal is to set a strategy, then monitor / track your progress – and inform future strategy

What role does a BI capability play?





# Strategic Planning

Do you have the capacity to monitor and track your performance against your goals– other than on an annual basis in a manually prepared report?

How do you tell whether you are likely to meet your targets during the year?

BI plays a significant role with strategic dashboards / scorecards to facilitate this process.





## 2. Planning, Budgeting and Forecasting

Does your organisation engage in Enterprise Resource Planning, or other planning?

- Student load planning / forecasting
- Financial budgeting
- Workforce planning
- Facilities / space planning
- Strategic asset management

If so, is it still done using separate processes in excel spreadsheets, or in a more sophisticated and coordinated way?



# Integrated process



University Strategic Plan



## Student Load Plan

(Targets and forecasts)

**Financial  
Budget /  
Forecast**

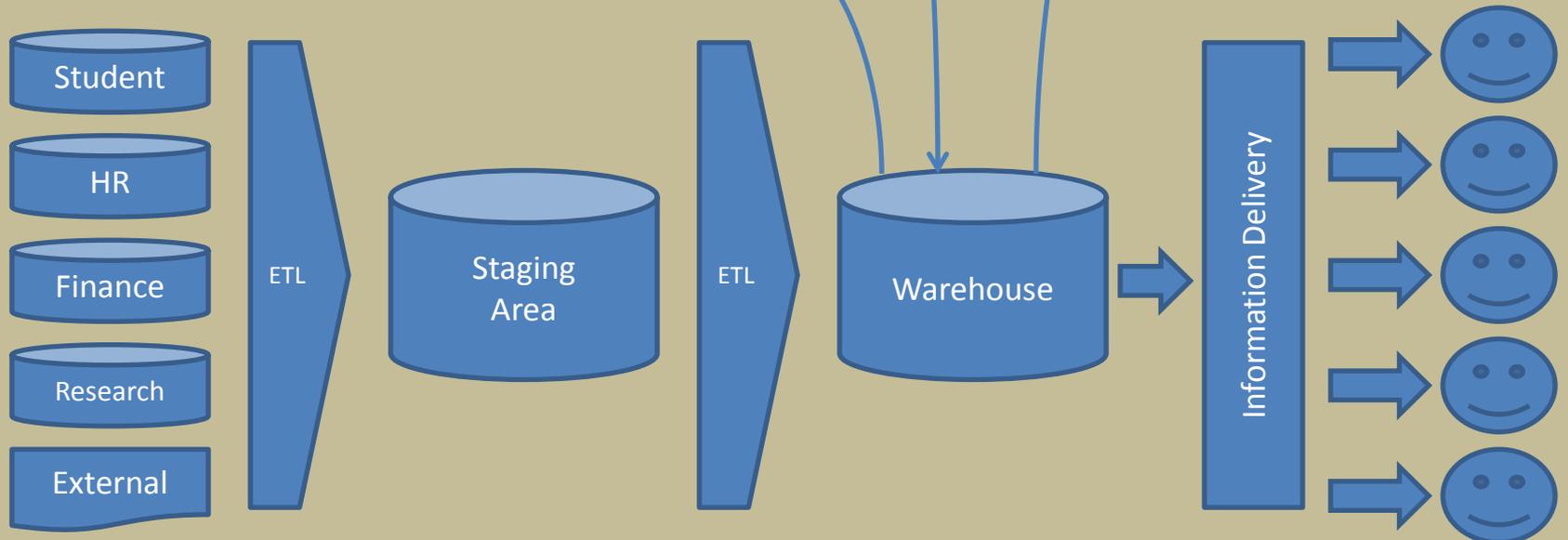
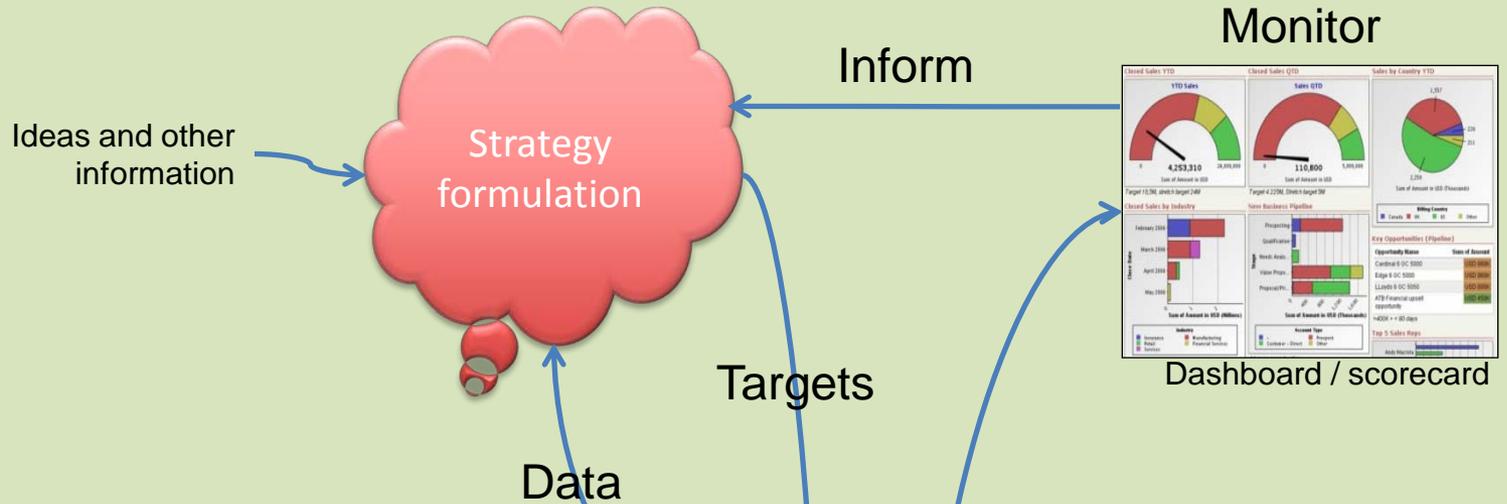
**Workforce  
Plan**

**Facilities  
Plan**

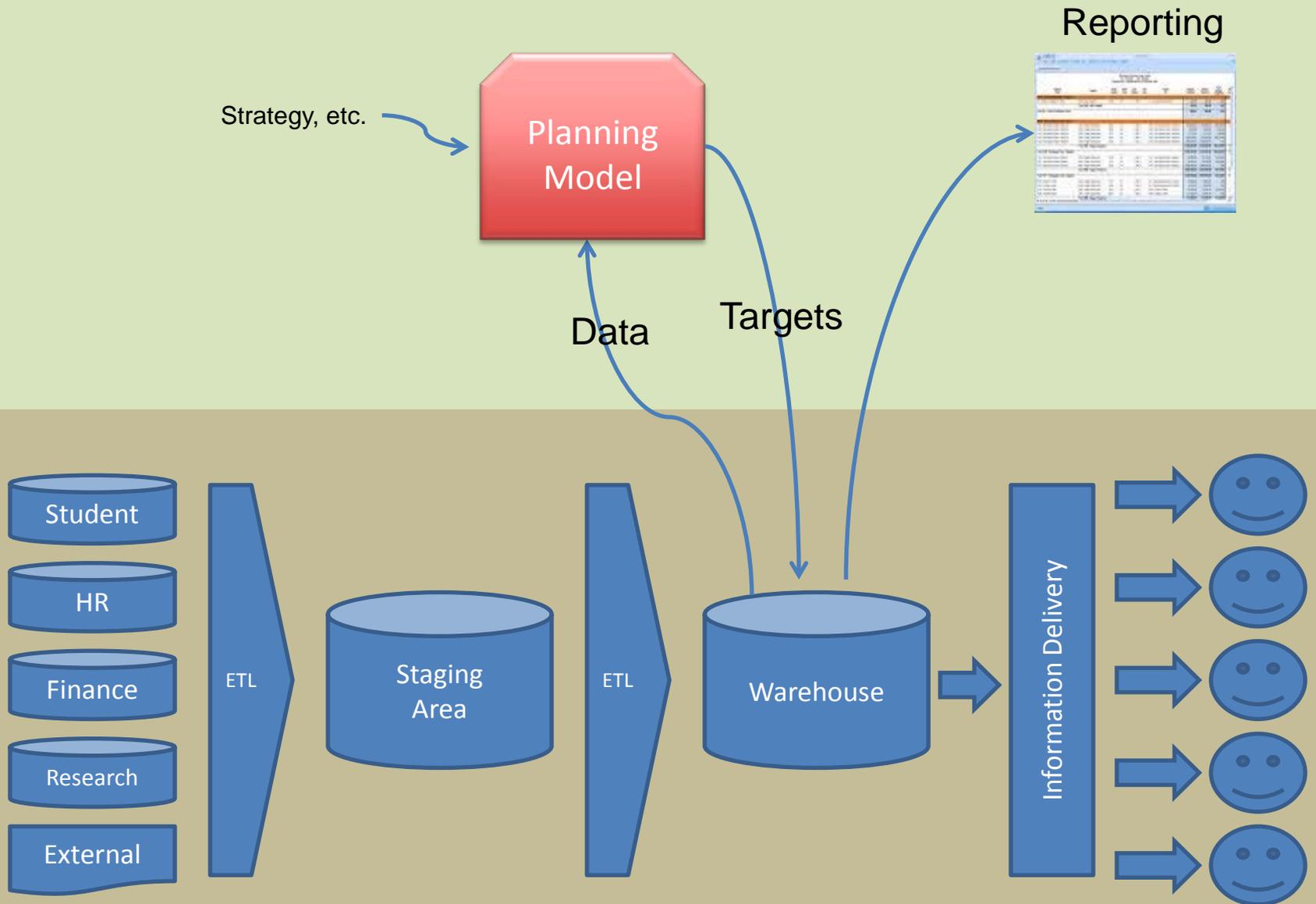
**SAM Plan**



# Strategy Monitoring and Formulation



# Planning, Budgeting and Forecasting





# Planning Toolsets

- Cognos Planning and TM1
- Hyperion (now Oracle)
- Others





# Roles and Responsibilities

How does planning relate to / fit with BI in an organisational and functional context?

I don't believe both functions should necessarily be part of the same organisational unit, but they will have to work together – driven by common strategic goals.



### 3. BI and Marketing / CRM

Typically BI plays a major role in marketing activities, because marketing is all about understanding the customer (assisted by CRM and analytical processes), and this understanding is increasingly based on data and information.

Like other business processes, modern marketing practices are become more evidence based.

But HE is still way behind the pack.





## BI and CRM

- Does your university have a CRM strategy?
- Does it do anything in the CRM space?

BI's relationship;

- Do you include an operational BI, or analytical component to CRM?





# Objectives of CRM

- Covers all customer types
  - Students
  - Government
  - Partners
- Single view of the customer / Customer lifecycle
  - from enquiry to alumni
- Assist customer related strategies
  - Attracting (eg. marketing)
  - Retention





# Components of CRM

- Operational
  - i.e. the management of operational tasks
    - eg. managing an enquiry
  - Operational reporting
    - eg. the number
- Analytical
  - Gaining customer understanding
  - Identifying opportunities



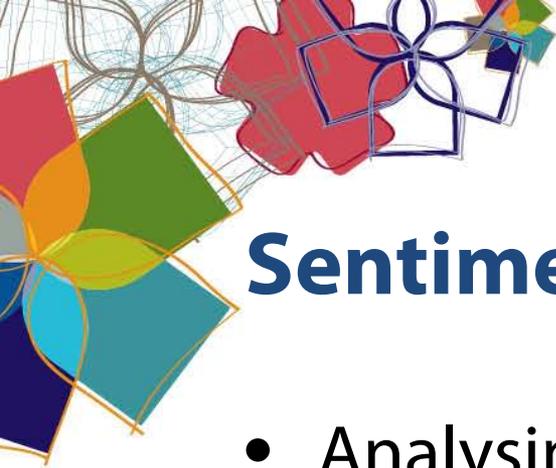


# BI and Other Marketing Activities

More sophisticated marketing techniques are increasingly used for improving marketing effectiveness in activities such as:

- Target marketing
- Predicting student behaviour





# Sentiment Analysis

- Analysing the content within social media sites and other repositories to determine how people feel about your University
- Emerging field still mainly used within the private sector, but considering students are high users of such technology, it's an obvious choice for Higher Ed
- Processes and technology is still emerging, but capabilities are available





## 4. Customer / Student Insights

Some organisations have set up specialist teams with the required skills and toolsets to gain insight into customer behaviour – I can see the same happening in Higher Ed.:

- Achieved by Advanced Analytical processes / Predictive Analytics
- Using advanced algorithms and models to predict student behaviour





# Advanced Analytics

Using advanced toolsets to analyse datasets

Often currently done using poor processes and toolsets (eg. MS Access and Excel).

Perform complex modelling and scenario analysis.

Applicable to some forms of Institutions Research and other activities.





# Predictive Analytics

Expands upon advanced analytics with a specific intention – to predict behaviour.

Is a process for predicting future behaviour based on the actions of other like customers / students.

- Seeks to understand common attributes / predictors of behaviour (positive and negative)
- Applies learning to prospective / current students to predict
- Allows mitigation plans, etc.





# Common Uses

- Private Sector
  - Identifying marketing opportunities
- Public sector
  - Provide better services to customers
  - Fraud (eg. ATO & Victoria's TAC)
- Insurance companies
  - Pricing optimisation



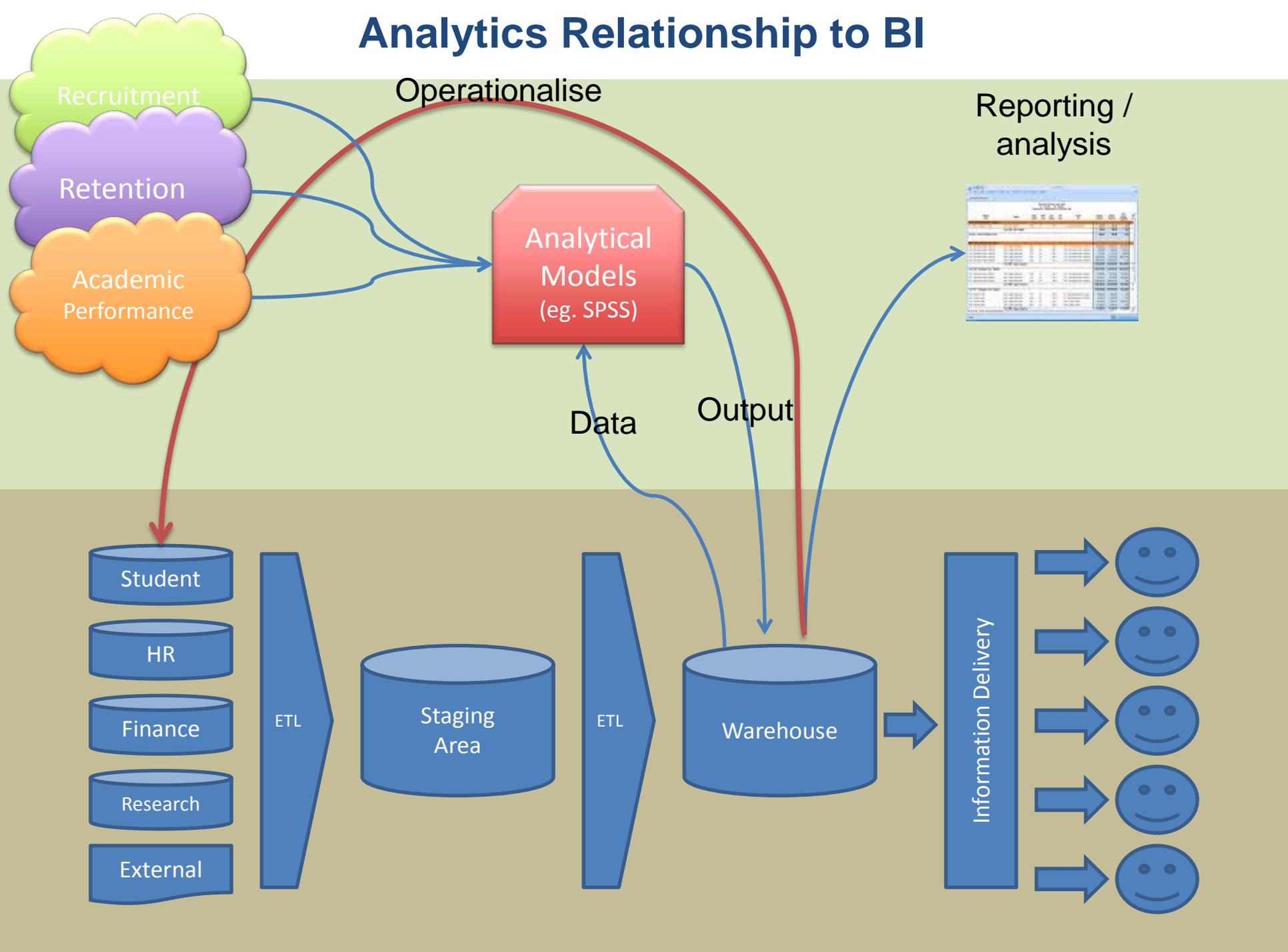


## Uses in HE

- Students at risk
  - Attrition
  - Poor academic performance
  - Other areas (eg. mental health)
- Customer segmentation / targeting
- Incorporates 'data mining' techniques



# Analytics Relationship to BI





# Advanced Analytics Toolsets

- SPSS
  - Base statistics toolset
  - Data Modeller (formerly Clementine)
- SAS
- Other commercial products
  
- Open source options utilising the R language
  - Generally not as accessible (i.e. user friendly)





# U.S. Examples

## Purdue's 'Signals' programme

- Informs students of their likely performance based on their identifiable attributes / behaviour – even only a couple of weeks into a semester
- Draws data from several disparate sources (over 20 data points) into an algorithm to construct a rating
  - Learning management system
  - Attendance
  - Grades
  - Etc.
- Produced impressive results in improving performance





# Roles and Responsibilities

As with Planning activities, how does Analytics relate to / fit with BI in an organisational and functional context?

Again, it is likely to be conducted separately, but linked via a common strategy and related implementation plan.





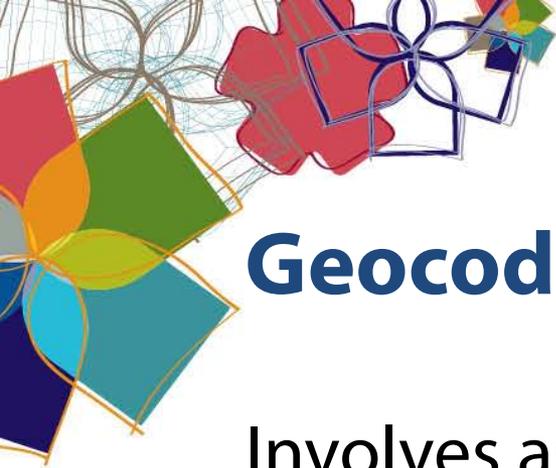
## 5. Location Intelligence

There's an obvious application in the current Low SES context (eg. SEIFA at CCD level), but others are relevant.

2 main processes involved;

- Geocoding
- Visualisation / analysis (eg. mapping)





# Geocoding

Involves assigning a geographic location (usually longitude and latitude) to an address.

This process has been performed by many organisations for a considerable amount of time (usually by the private sector in marketing activities)

Several methods and toolsets exist for doing so

- DEEWR & ABS method make sense for Aust. HE





# Operationalising Geocoding

Once-off or irregular geocoding is fine for irregular analysis tasks, but what if you need to integrate geographic data into operational business processes?

Would any of your operational processes benefit from it?

Certainly getting well beyond the scope of BI here, but it should be considered as part of acquiring a geocoding capability.



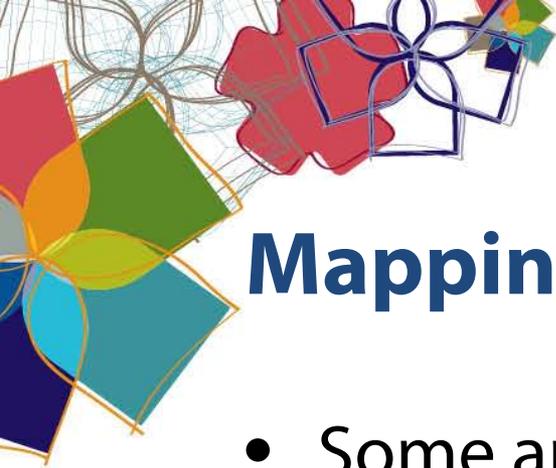


# Operationalising Geocoding

For example, building the capability into a CRM system to determine the SES status of students when they make their first enquiry – may influence the recruitment process, and how the operator handles their call.

In this case the CRM system needs to be able to geocode and assign an SES attribute to the record.

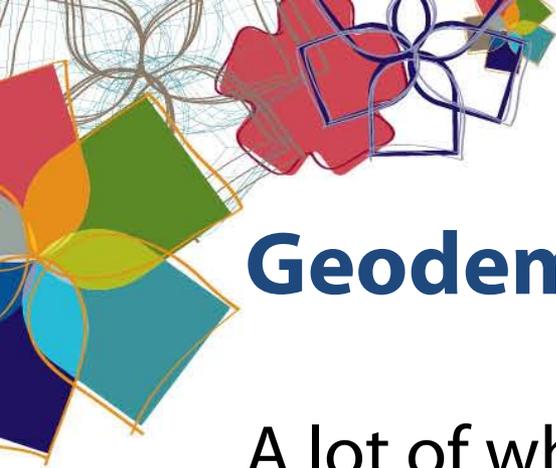




# Mapping

- Some analysis is best done using geographic representations of data
- Tools have been around for a long time
- Usually integrated into BI toolsets, but stand-alone options are better





# Geodemographics

A lot of what Unis do is driven by government funding - eg. the drive to understand SES status, and priorities shift to these areas.

But when you consider marketing objectives (eg. recruitment activities), they should go beyond whether a student is merely from a Low SES region.

Customer segmentation activities should outline many desirable attributes of a prospective student.





# Geodemographics

Assigning attributes to people based on location  
(beyond a simple SES status)

- Household characteristics
  - Family orientation / composition
  - Educational / vocational
  - SES
- Utilising ABS and other datasets

Aids in customer segmentation and target marketing activities





# Geodemographics

May require operationalising into CRM and other IT systems also.



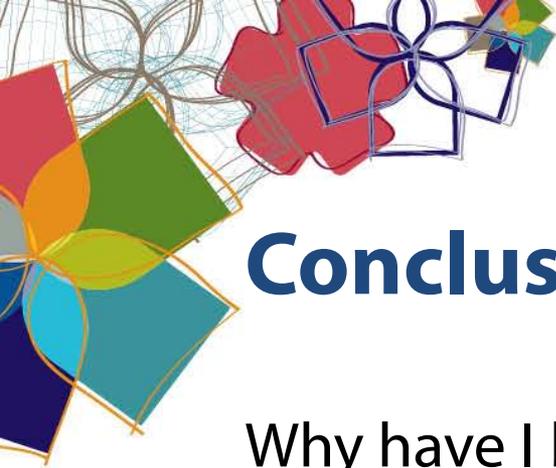


## 6. Don't Forget

- People
- Systems (including tools)
- Processes
  
- Organisational structure / responsibility
  
- And above all:

**Strategy!**





# Conclusion

Why have I bothered to mention these things?

You should be taking them into account when updating / creating a BI strategy, and linking them to other strategies (if they exist).

You should be engaging the business in discussions about these topics to inform the creation of these other strategies (eg. IR, Planning, CRM, etc).

Someone within your organisation has to evangelise these concepts – don't expect others to be aware of these ideas.





# Maturity

The truth is that the HE sector in Australia has a long way to travel, and is well behind others.

A marked increase in maturity is required for adoption, which will take time. There is a general lack of awareness of the promise of BI.

Funding is also an issue, of course.





## 7. Other Things to Think About

- Information Management and related topics
  - Structured and unstructured data
  - Knowledge management
  - Data management

