



# The University of Adelaide

## BI Solution Architecture & Delivery Model





# Agenda

- Some things you might not know
- How we tried to sell it / How we actually sold it
- Solution Architecture
- TM1 – A Data Warehouse Microcosm
- Technical Architecture (BI only)
- Organisation Structure
- Resource Mix
- Solutions Overview and Examples
- POLL: Areas of Interest?
- Questions



# Some things you might not know



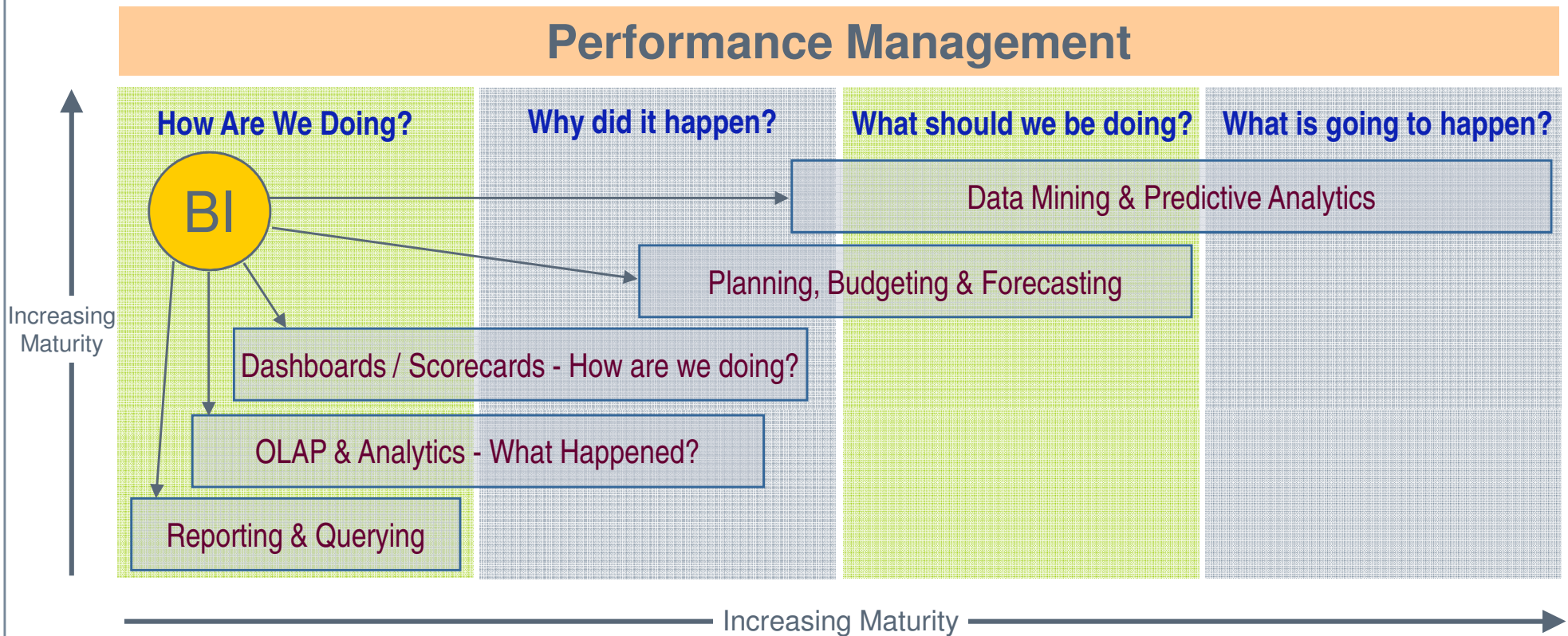
- The University of Adelaide (founded 1874) is **the third-oldest University in Australia** and is older than all but a handful of universities in England
- It was the first Australian university (in 1881) to **open its doors to women** on equal terms, ahead of Oxford (1920) and Cambridge (1948)
- It has 4 onshore campuses (**North Terrace, Thebarton, Waite and Roseworthy**) and a growing range of programs in **Singapore**
- It is a member of the **Group of Eight** – a coalition of leading research intensive Australian universities
- It owns the **National Wine Centre of Australia** – **that's here!**





# How we tried to sell it

Business Intelligence is a broad category of applications and technologies for gathering, storing, analysing, and providing access to data to help enterprise users make better business decisions which support Performance Management



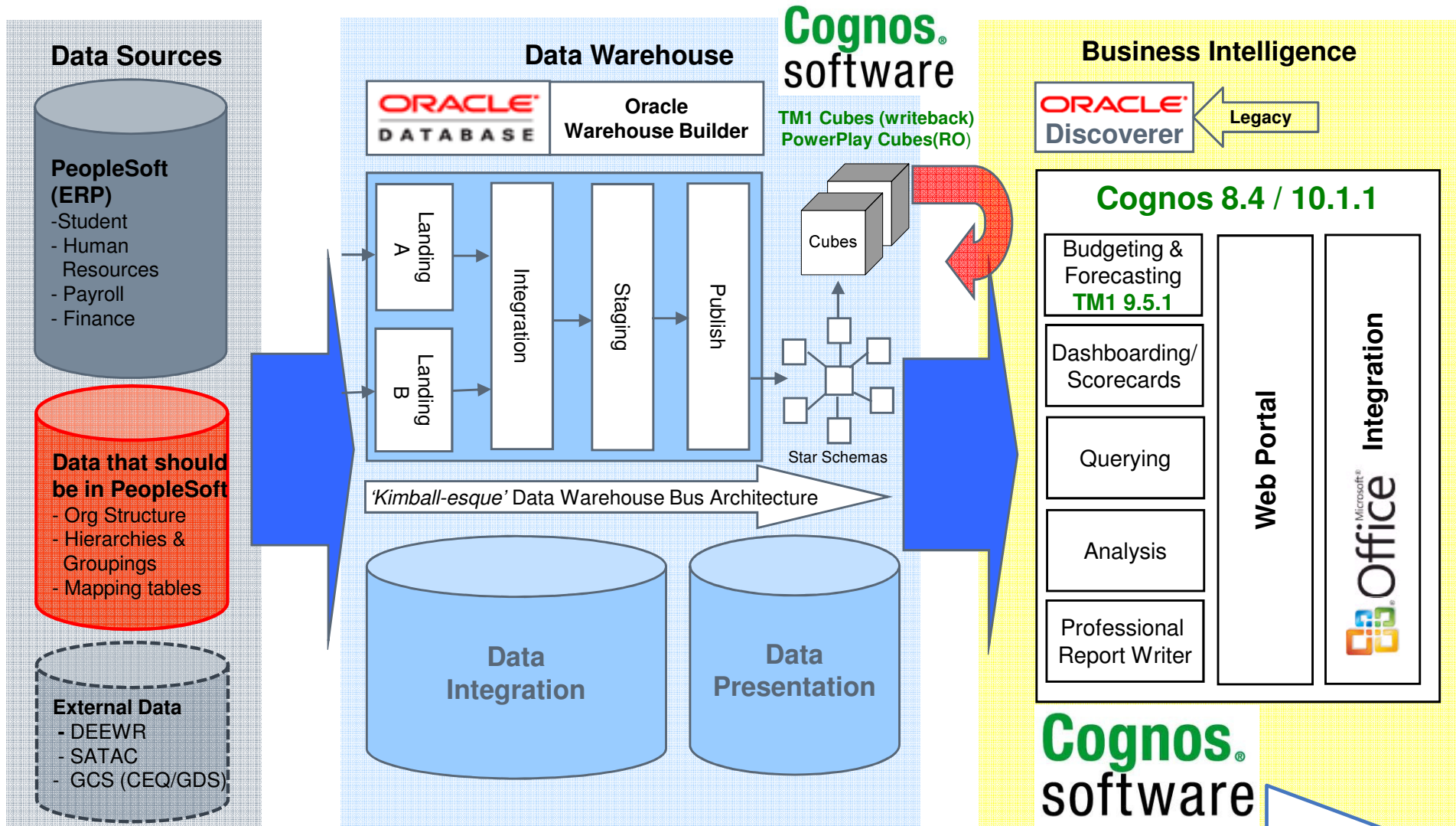


## How we actually sold it

- Organisations don't want to focus on KPI's and *performance management* when they are too busy putting out fires!!!!
- So solve an operational problem!
- For us its was payroll reporting (the University's biggest cost)
- Wide rollout, critical information to operational management of Faculties and Divisions, gained user acceptance of BI
- CFO then sponsored further investment in BI rollout (TM1 for Salary and Student Load Management)

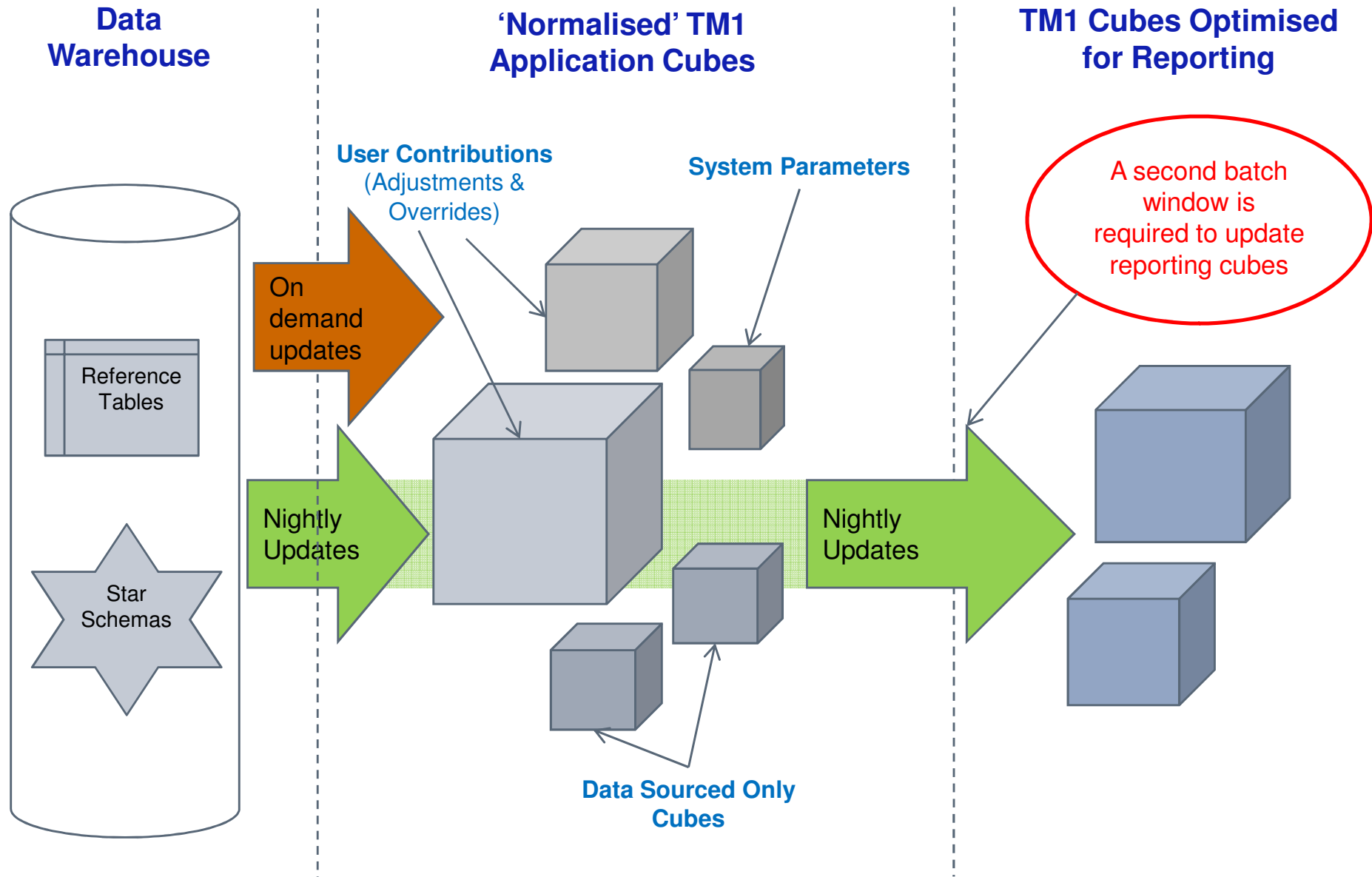


# Solution Architecture



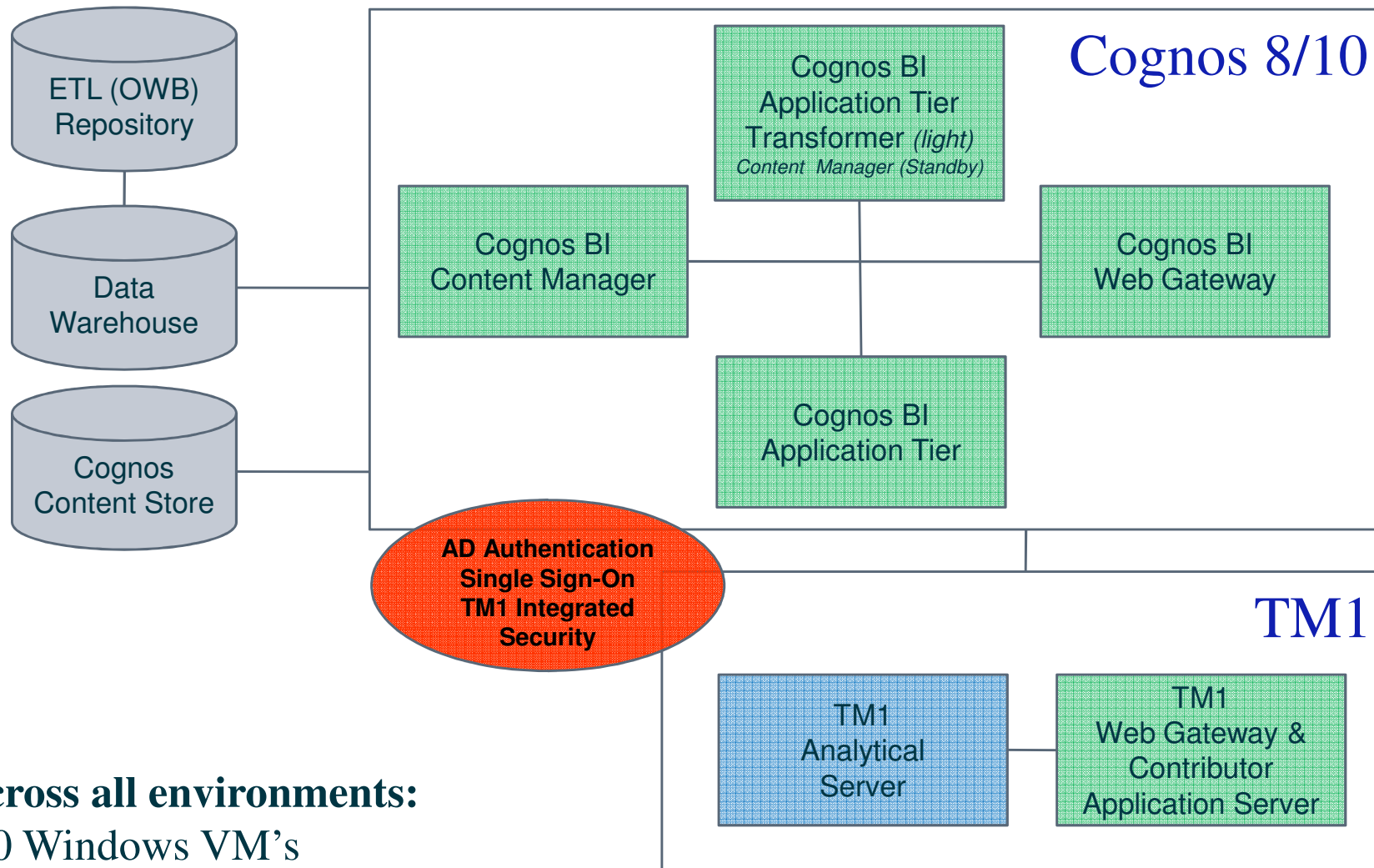


# TM1 – A Data Warehouse Microcosm





# Technical Architecture



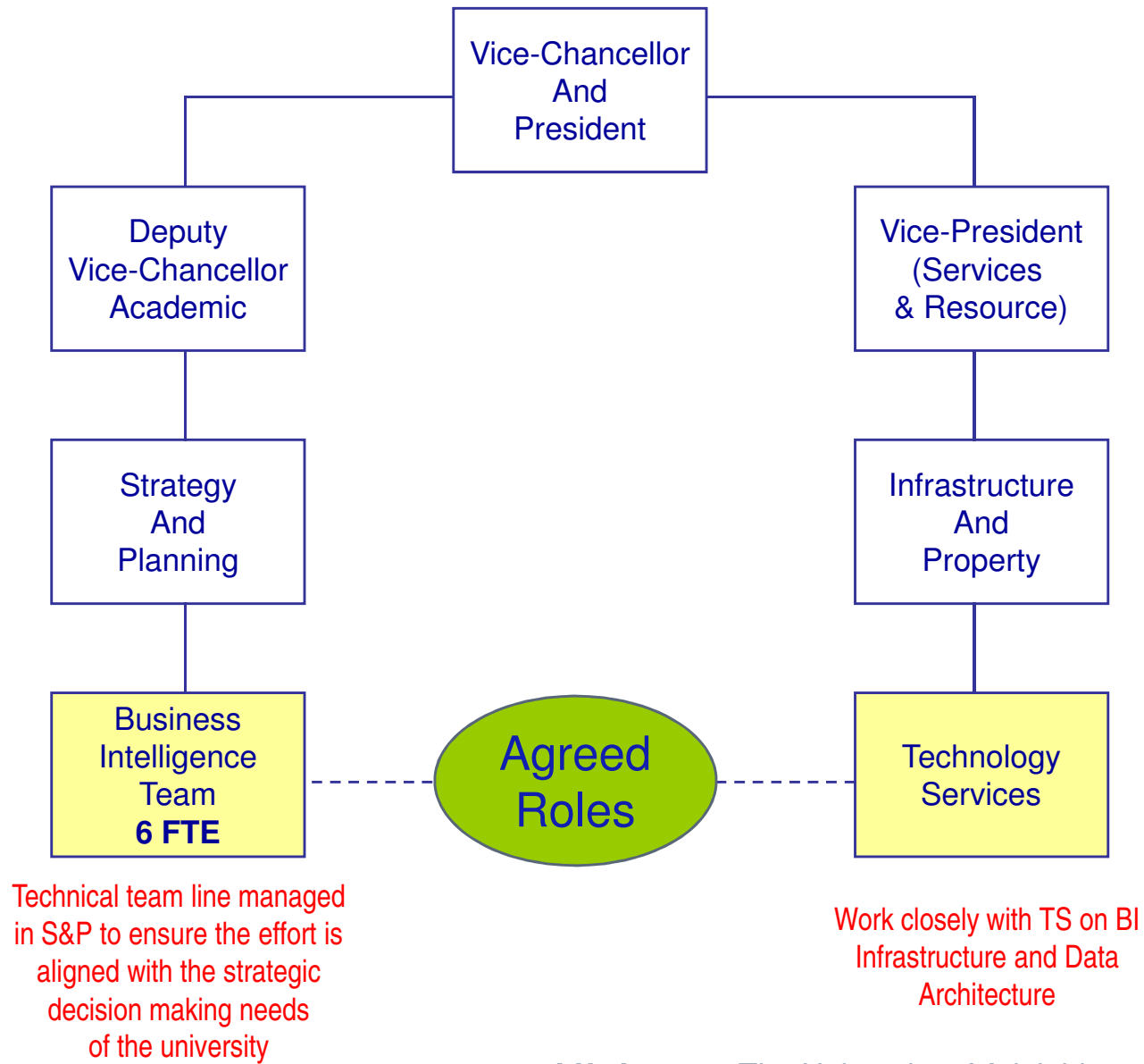
## Across all environments:

- 10 Windows VM's
- 8 Oracle 11g Databases on RAC
- 2 Dedicated Physical Servers (TM1)





# Organisation Structure





# Delivery - Resource Model

## 'In-house' BI Capabilities (\*6 FTE)

<b>Business</b>	Project Management
	Business Analysis
	End-user Support
<b>Data Warehouse</b>	Dimensional Modelling
	ETL Architecture
	ETL Development (Oracle Warehouse Builder)
	Database (Oracle)
<b>Cognos BI</b>	Administration/Cognos Connection
	Framework Manager Modelling
	Transformer Modelling
	Report Studio (+ other studio's)
<b>TM1</b>	Administration
	Turbo Integrator ETL
	OLAP Modelling and Rules

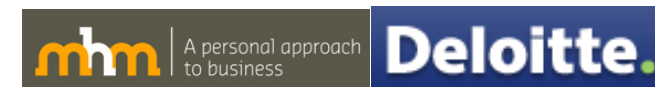
## Partners



Cognos Technical Architecture  
Software Installations and upgrades



TM1 Expertise  
TM1 Mentoring and Quality Assurance  
TM1 Development **overflow**



BI Strategy  
Business Analysis **overflow**

\*1 FTE focuses on upstream business processes / data quality

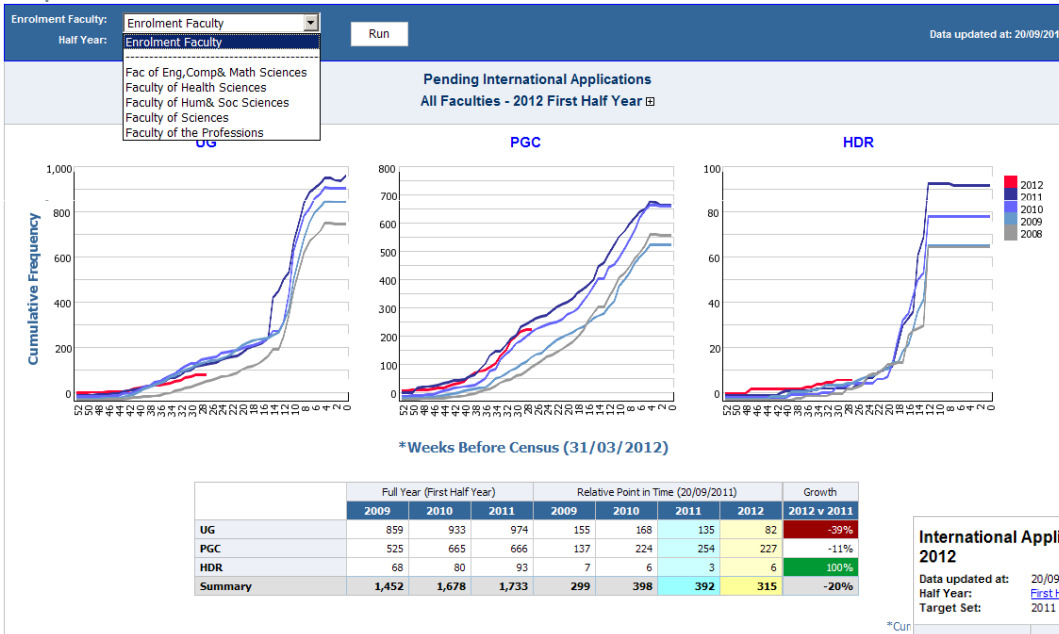


# Solutions Overview

	<b>Solution</b>	<b>Function</b>	<b>Capabilities/Technologies</b>
<b>Learning &amp; Teaching</b>	<b>Student Load Performance Reporting</b>	Monitoring performance of student enrolments against faculty targets	Dashboard Drillable Reports Prompted Reports
	<b>International Applications</b>	Monitoring international applications with date comparatives	Dashboard Expand/Collapse Reports
	<b>Program Performance Reporting</b>	Briefing book generated as one page per program (degree). Each page contains a series of metrics for the program.	Briefing Book
	<b>Course Reviews</b>	Identification of courses with low pass rates and course metrics	Briefing Book
	<b>Load Management Model</b>	Target Setting/Modelling for Student Enrolments, online calculation for Teaching Load and Funding Agreements.	TM1 Model Contributor Interface Prompted Reports (RS)
<b>HR/Finance</b>	<b>Payroll Reporting</b>	Bona-fide payroll reports burst to budget administrators. On-line reports with flexible prompts	Report Bursting Prompted Reports Data (Row level) Security
	<b>Commitments Reporting</b>	Payroll commitments	Prompted Reports Data (Row level) Security
	<b>Salary Management Model</b>	Salary Budgeting/Forecasting tool. Cash flowed budget assumptions, reporting and GL interface.	TM1 Model Contributor Interface Prompted Reports (RS)



# International Applications Dashboard



- Package contains both relational (star schema) and OLAP (Power cube as 2<sup>nd</sup> level star) data sources
- Report containers use items from both relational and cube data sources as string manipulation is limited in cubes, also PowerPlay cubes have a limited set of attributes

International Applications

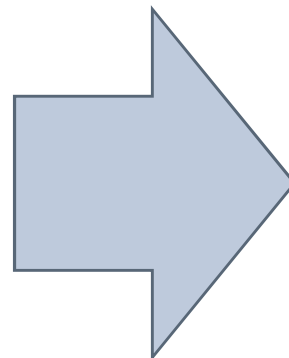
- International Application Program Filter
  - Application Event Fact
  - Pending Intl. Application Fact
  - Application Program State
  - Application Centre
  - Application (Details)
  - Effective Date
  - Action Date
  - Evaluation Date
  - Census Date
  - Admit Term
  - Enrolment Organisation
  - Award
  - Person
  - Home Address
- Cubes
  - International Applications Cube
    - Load Mgmt Group
    - Admit Year
    - Admit Half Year
    - Measures

## International Applications Activity 2012

Data updated at: 20/09/2011  
Half Year: First Half Year  
Target Set: 2011

Faculty	Program Level	Load Management Group	International Pending Applicants as at 20/09/2011 for First Half Year			Conversion Rates First Half Year (only apply at lowest level)		Calculated Load for First Half Year	Indicative First Half Year Target	Current Enrolments First Half Year for 2012		Pending Applications Growth	Calculated Load v Indicative Target
			2010	2011	2012	Average	Default	2012	2012	Students	EFTSL	2012 v 2011	2012
EC&MS	UG		113	78	73			31.39	324.6	0	0.0	-6%	40%
		PGC	63	30	15			14.0	210.9	0	0.0	-50%	7%
		HDR	50	48	56			15.9	96.0	0	0.0	0%	17%
Health Sci	UG		0	0	2			1.4	17.7	0	0.0	0%	8%
		PGC	4	16	4			3.64	168.4	0	0.0	-75%	2%
		HDR	2	12	0			0.0	120.1	0	0.0	-100%	0%
Hum&SS	UG		2	4	4			3.6	31.4	0	0.0	0%	12%
		PGC	0	0	0			0.0	16.8	0	0.0	0%	0%
		HDR	3	6	10			9.13	109.0	0	0.0	67%	8%
		UG	3	4	4			3.5	72.6	0	0.0	0%	5%
		A Cert. Aborig Studies in Music	0	0	0	-	0.85	0.0	0.0	0	0.0	0%	-
		ADip. Aborig Studies in Music-New	0	0	0	-	0.85	0.0	0.0	0	0.0	0%	-
		B. Arts	1	1	2	0.91	0.85	1.8	13.8	0	0.0	100%	13%
		B. Arts -Hons	0	1	0	0.81	0.85	0.0	2.5	0	0.0	-100%	0%
		B. Arts (International Studies) -Hons	0	0	0	-	0.85	0.0	0.0	0	0.0	0%	-
		B. Arts/B. Economics	0	0	0	-	0.85	0.0	1.1	0	0.0	0%	0%
		B. Arts/B. Music	0	0	0	-	0.85	0.0	0.0	0	0.0	0%	-
		B. Arts/B. Music Education	0	0	0	-	0.85	0.0	0.0	0	0.0	0%	-

JavaScript for collapse/expand functionality to mimic existing Excel reports





# Payroll Audit (Burst) Reporting

View report output versions - Audit Payroll Summary Report (Cost Centre) Help X

Select an output version to view by clicking on a Format hyperlink.

Version: 14 July 2011 9:31:45 AM [Manage versions...](#)

Entries: 31 - 45

Formats	Languages	Actions	
<a href="#">PDF</a>	362 - School Medical Sciences Office	English (Australia)	
<a href="#">PDF</a>	363 - Sch Popn Hlth & ClinPractc Off	English (Australia)	
<a href="#">PDF</a>	364 - School Paeds & Repro Hlth Off	English (Australia)	
<a href="#">PDF</a>	365 - School of Psychology Office	English (Australia)	
<a href="#">PDF</a>	366 - Robinson Inst	English (Australia)	
<a href="#">PDF</a>	370 - Medical School Group	English (Australia)	
<a href="#">PDF</a>	371 - Florey Medical Research Fund	English (Australia)	
<a href="#">PDF</a>	373 - Acute Care	English (Australia)	
<a href="#">PDF</a>	374 - Anatomical Sciences	English (Australia)	
<a href="#">PDF</a>	375 - Nursing	English (Australia)	
<a href="#">PDF</a>	376 - Clinical and Exp Pharmacology	English (Australia)	
<a href="#">PDF</a>	377 - Public Health	English (Australia)	
<a href="#">PDF</a>	378 - General Practice	English (Australia)	
<a href="#">PDF</a>	379 - Obstetrics and Gynaecology	English (Australia)	
<a href="#">PDF</a>	380 - Orthopaedics and Trauma	English (Australia)	

Close

- Payroll Audit Report burst for ~120 cost centres (burst key) to ~60 recipients across the organisation
- Fortnightly and monthly bona-fide reports with different contents
- Report is delivered using three methods
  - Saved in the Content Store/Connection
  - Sent by email as an attachment
  - Saved to file system
 (*Cognos Configuration - Save report outputs to a file system and the Archive Location root*)



Burst key cannot be shown in email subject or attachment filename

Audit Payroll Summary Report (Cost Centre)

Business Unit: UNIAD  
 Faculty/Division: Faculty of Health Sciences  
 School/Branch: School of Medicine  
 Cost Centre: 383 - Psychiatry  
 Calendar Group: 2011F14 (02-JUL-11 to 15-JUL-11)

Name	Person ID	Rod	Dept (HR)	Project ID	Pos Nbr	Reports To/Supervisor	Pos Cat	Grade	Step	FTE	Reg Tmp	Cont Begin Date	Cont Exp End Date	Base Salary	Leave Taken	Casuals	Loadings	Over-time	Terminations	Other	On-Costs	Provisions	Scholarships	Total
		D	3834	15009600	00002626		Substantive	HEO Lv 6/6	7	1	R	2/06/1996		2,078.31	610.16	0.00	0.00	0.00	0.00	0.00	602.80	670.62	0.00	3,761.08
		D	3835	15009600	00002682		Substantive	HEO Lv 4	4	0.4	R	02/05/1994		834.22	0.00	0.00	0.00	0.00	0.00	0.00	194.30	563.10	0.00	1,591.62
		D	3834	15009600	00003201		Substantive	Level E	1	1	R	17/01/2011		5,677.04	0.00	0.00	982.65	0.00	0.00	0.00	1,551.14	1,174.95	0.00	9,385.78
		D	3847	15009600	00004709		Substantive	HEO Lv 4	4	0.6	R	19/07/1993		1,251.32	0.00	0.00	0.00	0.00	0.00	0.00	291.45	665.56	0.00	2,208.33
		D	3835	50104786	00015266		Substantive	HEO Lv 7	4	0.6	T	11/11/2010	10/11/2011	1,726.22	0.00	0.00	0.00	0.00	0.00	0.00	257.13	351.38	0.00	2,334.73
		D	3834	15009600	00004806		Substantive	Level E	1	1	R	04/05/2001		5,109.33	567.70	0.00	492.04	0.00	0.00	0.00	1,436.87	3,847.69	0.00	11,453.63
		D	3834	15009600	00014195		Substantive	HEO Lv 6	4	1	R	07/11/2010		2,585.08	0.00	0.00	0.00	0.00	0.00	0.00	602.10	851.87	0.00	4,039.05
		D	3834	22003500	00014195		Substantive	HEO Lv 6	4	1	R	07/11/2010		646.27	0.00	0.00	0.00	0.00	0.00	0.00	150.53	212.96	0.00	1,009.76
														<b>3,231.35</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>752.63</b>	<b>1,064.83</b>	<b>0.00</b>	<b>5,048.81</b>
		D	3834	15009600	00014326		Substantive	HEO Lv 5	4	1	R	01/12/2007		2,382.46	0.00	0.00	0.00	0.00	0.00	0.00	554.90	1,264.43	0.00	4,201.79
		D	3834	15009600	00004716		Substantive	Level E	1	0.5	T	04/06/2010	03/06/2013	1,004.10	1,635.19	0.00	698.51	0.00	0.00	0.00	824.00	-923.18	0.00	3,436.82
		D	3834	15009600	-		Substantive	HEO Lv 6	1	1	T	16/05/2011	30/12/2011	0.00	0.00	3,226.67	0.00	0.00	0.00	0.00	0.00	480.62	0.00	3,707.29
		D	3834	44108224	00016726		Substantive	HEO Lv 5	2	1	T	02/05/2011	31/12/2013	2,205.19	0.00	0.00	0.00	0.00	0.00	0.00	329.07	309.61	0.00	2,844.07
		D	3834	15009600	00009623		Substantive	Level C	3	1	T	30/03/2009	29/03/2014	3,884.19	0.00	0.00	982.65	0.00	0.00	0.00	1,133.56	1,026.61	0.00	7,027.21
		D	3835	15009600	00016606		Substantive	Level C	6	1	R	01/10/1985		0.00	4,220.56	0.00	982.65	0.00	0.00	0.00	1,211.92	-3,158.55	0.00	3,256.60
		D	3834	15009600	00016379		Substantive	Level A	1	0	T	15/03/2011	14/03/2012	836.65	209.46	0.00	0.00	0.00	0.00	0.00	155.92	-123.67	0.00	1,078.35
		D	3834	15009600	00016605		Substantive	Level E	1	1	R	01/10/1985		0.00	2,838.52	0.00	246.02	0.00	0.00	0.00	718.45	-2,683.25	0.00	1,119.74
														<b>30,224.38</b>	<b>10,181.60</b>	<b>3,226.67</b>	<b>4,384.52</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>10,494.75</b>	<b>3,950.53</b>	<b>0.00</b>	<b>62,462.45</b>

This report has been reviewed in line with the University's Payroll Management Procedure and is a fair and reasonable record of salaries and wages paid to bona fide employees of the University.

Reviewed by: \_\_\_\_\_

Position: \_\_\_\_\_

Signed: \_\_\_\_\_

Date: \_\_\_\_\_



# Online Payroll Reporting

## Row (Data) Level Security - #CSVIdentityNameList()#

**Business Intelligence**

**Ad-hoc Payroll Report (Cost Centre)**

**Calendar Group:** 2011F24 (19-NOV-11 to 02-DEC-11) ▲  
 2011F23 (05-NOV-11 to 18-NOV-11)  
 2011F22 (22-OCT-11 to 04-NOV-11)  
 2011F21 (08-OCT-11 to 21-OCT-11)  
 2011F20 (24-SEP-11 to 07-OCT-11)  
 2011F19 (10-SEP-11 to 23-SEP-11)  
 2011F18 (27-AUG-11 to 09-SEP-11)  
 2011F17 (13-AUG-11 to 26-AUG-11)  
 2011F16 (30-JUL-11 to 12-AUG-11)  
 2011F15 (16-JUL-11 to 29-JUL-11)  
 2011F14 (02-JUL-11 to 15-JUL-11) ▼

[Select all](#) [Deselect all](#)

If you select multiple Calendar Groups, the dollar values will be aggregated in the report.

**Faculty/Division:** Faculty of Health Sciences ▼

**School/Branch:** School of Medicine ▼

**Cost Centre:** Department Label (Department) ▼

**Staff:** Department Label (Department) ▼  
 Acute Care (373)  
 Medicine (384)  
 Ophthalmology & Visual Science (372)  
 Orthopaedics and Trauma (380)  
 Psychiatry (383)  
 School of Medicine Office (361)  
 Surgery (385)

- Implemented in prompt pages based on 3 tiered organisation structure in relational tables. User can be added at any level:

```
([Faculty Code] in (#CSVIdentityNameList()#))
```

OR

```
([School Code] in (#CSVIdentityNameList()#))
```

OR

```
([Department Code] in (#CSVIdentityNameList()#))
```

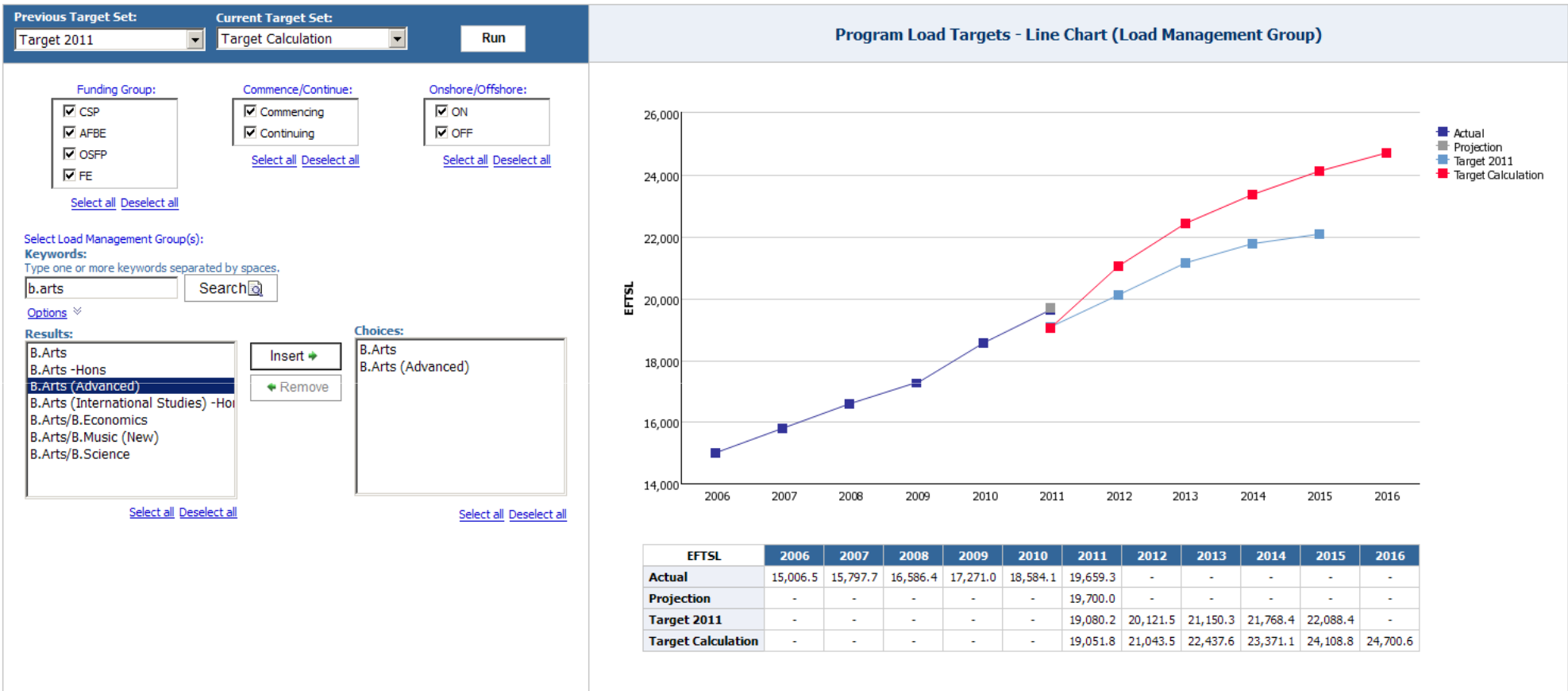
- Same relational prompts have been used to apply data level security to TM1 data sources by constructing MUN with #prompt



# Load Management Model Trending

- Graphical view of historical and modelled Program Load from live TM1 cube
- User selectable series chart nodes (MUN) using #prompt to construct MUN

```
# '[LMM_Program_Targets].[Scenario LMM].[Scenario LMM].[Total Scenario]->:[TM].[Scenario LMM].[Scenario LMM].[@MEMBER].[ ' + prompt('pPrevTarget','token') + ' ]' #
```







## POLL: Areas of Interest?

- ❑ Upgrading from to 8.4 to 10.1.1 in an integrated TM1 environment (32 vs. 64 bit considerations and Dynamic Query Mode)
- ❑ Salary Budgeting and Forecasting with TM1
- ❑ Reporting from Oracle, PowerPlay and TM1 all in the same package – ‘joining’ data from PowerPlay and TM1 cubes
- ❑ Reporting challenges with TM1 data sources, performance limitations with 8.x
- ❑ **Don't care, I'm just here for the free drinks**





# Questions

