



THE USE OF TABLEAU AT THE UNIVERSITY OF TRINIDAD AND TOBAGO

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Quality Assurance & Institutional Effectiveness, UTT

Business Intelligence (BI)

Business Intelligence (BI) is defined as a broad category of [applications](#) and technologies for gathering, storing, analyzing, and providing access to [data](#) to help [enterprise](#) users make better business decisions (Terzić, 2008).

BI applications include the activities of [decision support systems](#), query and reporting, online analytical processing ([OLAP](#)), statistical analysis, forecasting, and [data mining](#).



COMPETITION FOR STUDENTS AND RESOURCES



THE MOST VALUABLE NATURAL RESOURCE

DATA



WHY ?

EVERYONE IS ON THE GRID



Data

- **Data is the new natural resource**
 - ❑ Most persons have an average of three (3) email accounts
 - ❑ **Social Media Presence**
 - ✓ Facebook
 - ✓ Twitter
 - ✓ Instagram
 - ✓ LinkedIn
 - ✓ Pinterest
 - ✓ Google+ etc.
 - ❑ Someone can take a picture of you and Google can track the location of where that picture was taken
 - ❑ Your location is constantly being tracked and stored on the cloud along with your surfing habits, what you buy, what event you attended etc.



Smart Devices

- Television (Smart TVs)
- Smart watches, Fridges (Wi-Fi, apps & touchscreen)
- Smart Cards
- Cars and equipment can be tracked through GPS technology
- Student and Financial, HR Information Systems
- Data Marts and Companies
- Government Organisation (CSO, Central Bank, Ministries etc.)



A full **90%** of all the data in the world has been generated over the last two years

Source: SINTEF (Largest independent research organisation in Scandinavia (May 22, 2013))

Why Big Data Is The New Natural Resource

When data is a resource that anyone can mine, then decision-making transitions from being reserved for the few, and becomes a central issue for the masses.

Bob Picciano, Senior Vice President, Information and Analytics, IBM

Question

How do we harvest this data to generate meaningful information for informed decision making?



What is TABLEAU?

Tableau® is a powerful, flexible application for visually analyzing and understanding data at a fraction of the cost of traditional business intelligence software. The software, developed using breakthrough technology from Stanford University, is easy-to-use and provides browser-based analytics and data visualization tools.

Stanford University's computer science department is quoted as being an engine for economic growth in Silicon Valley, producing the entrepreneurs who created the technologies behind companies such as Google and Yahoo.

Tableau Software, Inc.

Company and Leadership

- Based on breakthroughs from Stanford University, Tableau makes visual analysis and business intelligence software.
- Company leadership includes award winning researchers: Professor Pat Hanrahan, Dr. Chris Stolte & Dr. Jock Mackinlay.
- The company is headquartered in Seattle, WA.

Customers

- + Google
- + Allstate
- + Cornell
- + Harvard
- + Apple
- + NSA
- + Microsoft
- + 1,000's more

Awards

Recognition: Industry awards and achievements include:

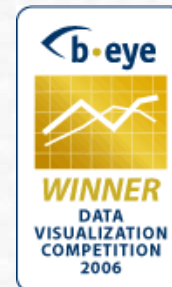
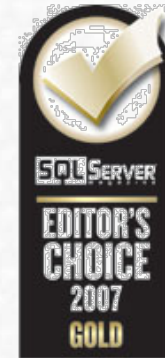
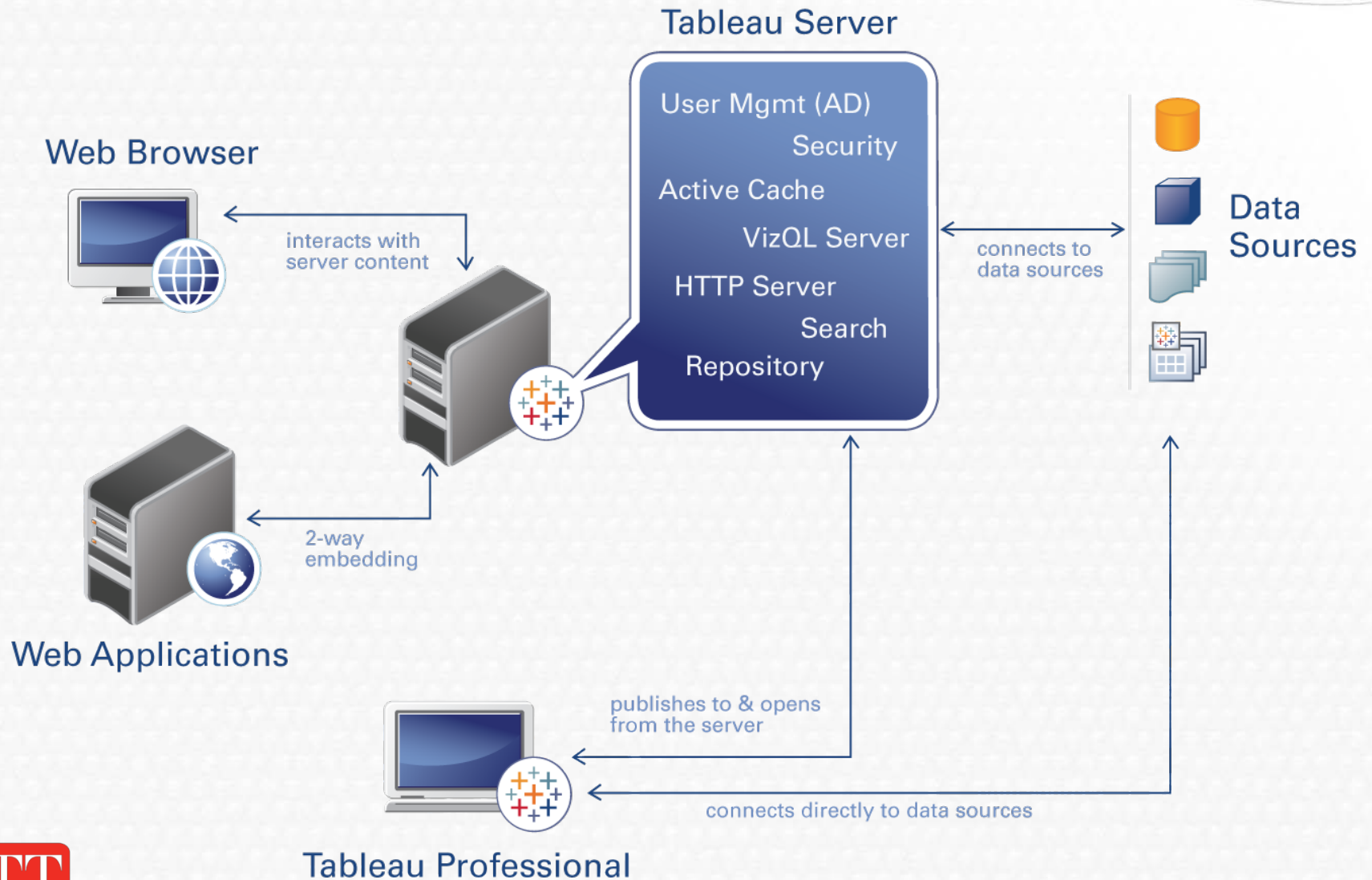


Tableau BI Architecture



Visual Intelligence Trends



“Interactive visualization tools dramatically improve the ease of use and understanding of the data.”



“Tableau Software is a major step in the right direction toward developing the next generation of business intelligence software.”



“The biggest benefit Cornell has derived from using Tableau Software has been the transition to a self-service query and analysis architecture that frees end-users from having to rely on IT for each new request for information.”



“Visual analysis software is needed by a broad audience of people, not just those who have the term “analyst” in their titles...with well-designed visual analysis tools like Tableau, visual analytics is poised to explode.”



"How good is Tableau? In terms of generating useful, multidimensional visual analysis, it's like going from an Etch-a-Sketch to Industrial Light and Magic. Quite simply, it's the best piece of software CFO has run across in years."

Magic Quadrant

Figure 1. Magic Quadrant for Business Intelligence and Analytics Platforms



↑ ABILITY TO EXECUTE

COMPLETENESS OF VISION →

As of February 2014

Source: Gartner (February 2014)

Customers: 3000 Companies Strong



Advertising and Marketing

Avenue A | Razorfish
DoubleClick
Draft FCB
Ogilvy
Predicta Brazil
The Martin Agency

Banking and Finance

Bank of America
Barclays Global
Citigroup
Draft FCB Group
EverBank Direct
Fifth Third Bank
Greater Iowa Credit Union
Wells Fargo

Charities

British Red Cross
Christian Relief Services Charities
DC Children & Youth Inv. Trust Corp.
Goodwill Industries
United Way of Rock River Valley
World Vision

Communications

Bell Canada
Bell South
FiberTower
Lucent
Mitel Networks Corporation
Motorola
Sprint
T-Mobile
Telstra
Verizon Communications

Consulting and Legal

Baker & McKenzie
Booz Allen Hamilton
Clorox Company
Cornerstone Research
Deloitte & Touche LLP
Electronic Data Systems Corporation
Ernst & Young
McKinsey & Company
Mercer
Norbridge

Energy & Utilities

Atomic Energy of Canada
Duke Energy Corporation
Louisville Water Company
Omaha Public Power District
Saudi Aramco
TXU
Williams Midstream
WindLogics

Engineering and Construction

Bechtel Corporation
Beezer Homes
Kiewit Corporation
McGraw-Hill Construction
St. Onge Company

Financial Information

Dunn & Bradstreet
Equifax
Fannie Mae
HTM Corporation
Moody's Investors Service
Scottish Re
Standard and Poor's

Food and Beverage

Chicken of the Sea
Nestlé
Prairie Berry Winery
Sierra Nevada Brewing Company
Starbucks Coffee
The Coca-Cola Company
Turkey Hill Dairy

Healthcare

Barnes Jewish Hospital
Blue Cross Blue Shield of Alabama
Caremark
Good Shepherd Medical Center
Harvard Medical School
Johnson & Johnson
Kaleida Health
LSU Health Sciences
Roche Diagnostics
St. Jude Children's Research
University of Miami Medical Center
Wake Forest Health Sciences

Insurance

AAA Allied Group
Amica
Esurance
Marsh & McLennan
Mutual of Omaha
Nationwide Insurance
Progressive
The Regence Group

Investment and Brokerage

Bridgewater Associates
Charles Schwab
Dundee Securities
Merrill Lynch
National Financial Partners
New Enterprise Associates
RBC Dain Rauscher
Rosenblatt Securities
Stone Castle Partners

Manufacturing

Air Products
Alcoa
Boeing
Dow Chemical
Hitachi
Honda
Jabil Circuit
KLA Tencor
Lockheed Martin
Pratt & Whitney
Ricoh
Sony
Steelcase
Toyota

Media and Entertainment

CNET Networks
Discovery Communications
Dow Jones and Company
Epic Games
Microsoft Xbox
New York Times
O'Reilly Media
Sony
TiVo
Univision

Pharmaceutical

Alza Pharmaceutical
Cephalon
Eli Lilly
Johnson & Johnson
McKesson
Merck
Novo Nordisk
Pfizer
Sanofi Aventis

Government and Public Sector

Australia Attorney General
DC Government
Federal Aviation Administration (FAA)
Government of Canada
National Science Foundation
NSA - National Security Agency
NYC Department of Education
Pacific Northwest National Lab (PNNL)
SOCOM - US Special Ops Command
US Air Force
US Army
US Bureau of Land Management
US Department of Agriculture (USDA)
US Department of Justice
US Department of the Navy
Veteran's Benefit Association (VBA)

Research & Development

Bayer CropScience
Boeing Phantomworks
General Electric Global Research
Lawrence Livermore Labs
MITRE
National Institute of Health
National Reconnaissance Office
National Visualization Analytics Center
Pacific Northwest National Labs
Quest Diagnostics

Retail

Amazon.com
Barnes & Noble
Borders
Caremark CVS
Lowe's
MAPCO
Pilot Travel LLC
Safeway
Walmart
Wet Seal

Service and Outsourcing

ADP
Computer Information Concepts
EDS
Hmetrix
Madrona Solutions Group
Oco
StrategicOne
Wolters Kluwer

Technology

Adobe
AOL
BEA Systems
CNET Networks
eBay
Electronic Arts
ESRI
Google
HP
IBM
Microsoft
MySQL
Novell
Pay Pal
VMWare
TechNexus

Travel & Leisure

Alaska Airlines
Bourne Leisure
Celebrity Cruise Lines
Expedia
Royal Caribbean Cruise Lines
Sandiego.com

Universities and Colleges

Appalachian State University
Chemetka Community College
Cornell University
DePaul University
Duke University
Georgetown University
Johns Hopkins University
London School of Economics
Ohio State University
Pitzer College
Providence College
San Diego State University
University College- Dublin
University of North Carolina – Chapel Hill

History of Tableau at UTT

Planned implementation of Tableau Visualisation Software in the following departments:



Registry



Human Resources



Finance

Possible Uses/Benefits of Tableau at UTT

Student Services/Academics

- Visual representation of
 - ✓ Student Performance,
 - ✓ Programmes and college performance
 - ✓ Trend analysis on enrolment,
 - ✓ Graduation and attrition rates
 - ✓ Student Satisfaction Surveys
 - ✓ Lecturer Course Loads and Timetable
 - ✓ Student Attendance
 - ✓ Department Performance
 - ✓ Student Recruitment and Application
- Generate “What If” scenarios and forecast on student population, student needs assessment etc.



Possible Uses/Benefits of Tableau at UTT

Human Resources

- Visually track staff leave and attendance records
- Dashboards for staff performance, staff training and capacity building
- Compensation Analysis (#of Employees by Job Function)
- Monthly Hiring Trends
- (“What-if ” retirement age planning)
- Workforce Planning – years from Retirement and % of Employees by Years to Retirement
- Potential Area Review – Performance Rating Profile
- Cumulative YTD New Hires
- Attrition, Hire and Turnover Rates , Headcount and Average Tenure
- An overview of survey results given by HR



Possible Uses/Benefits of Tableau at UTT

Finance

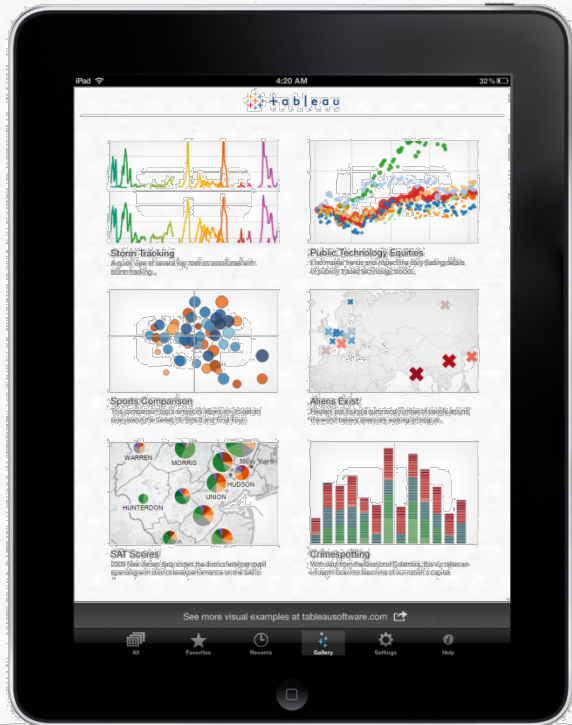
- Expenditure for Non Academic and Faculty
- Year over year Volume and Profit
- A detailed breakdown of university expenditure over time
- Visual analysis of UTT's performance based on predetermined indicators, spending activities and areas of concern



Possible Uses/Benefits of Tableau at UTT

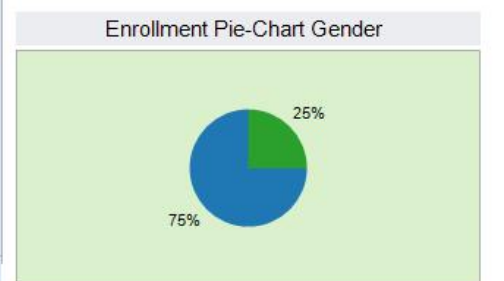
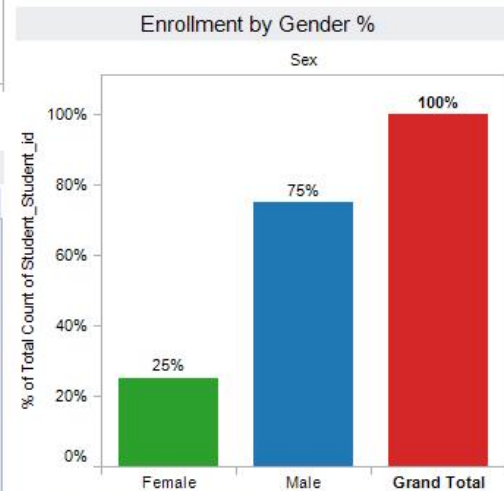
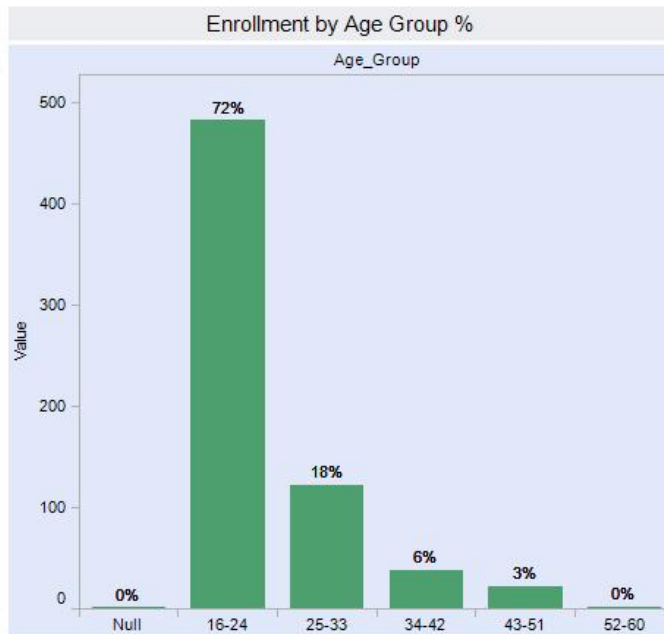
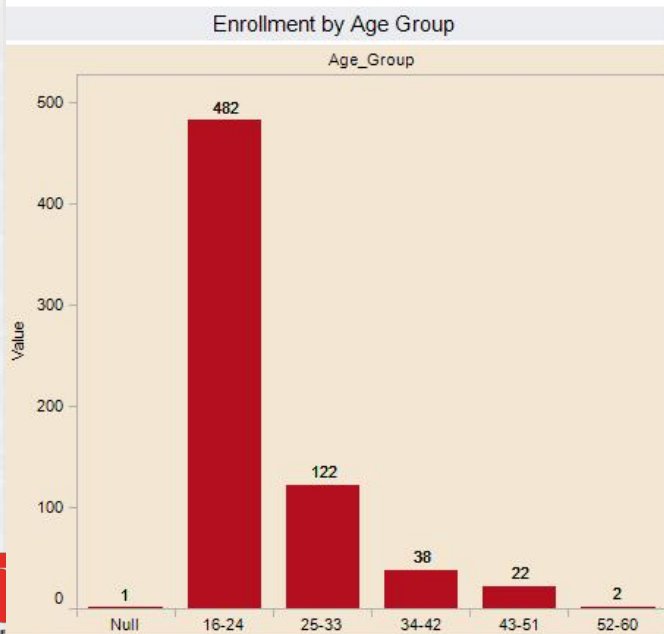
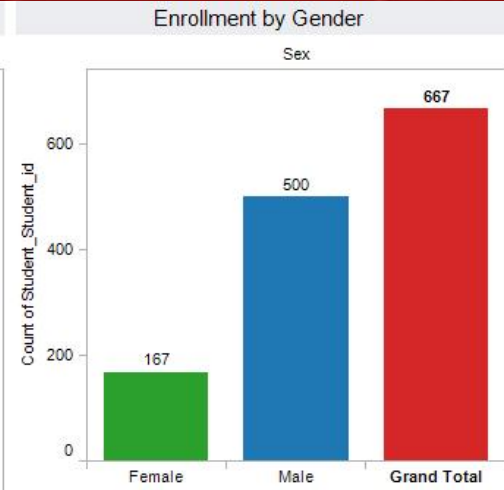
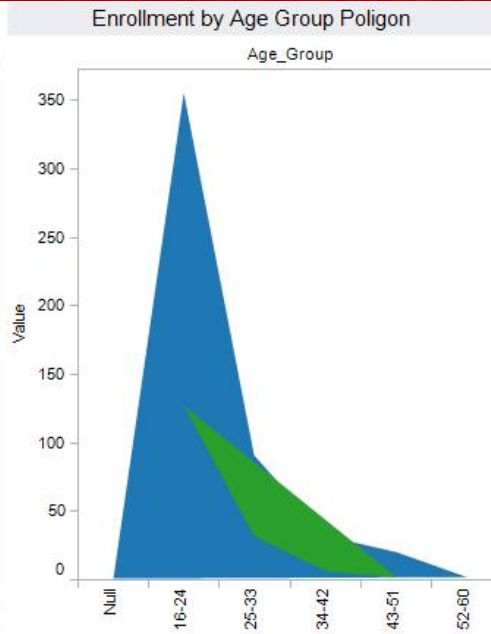
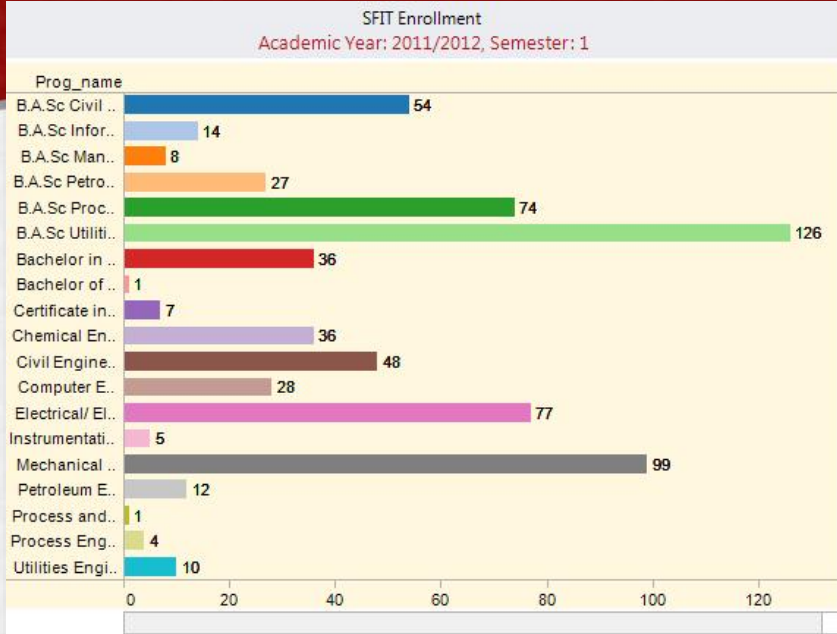
Other

- IT project Success Trends (Successful , Failed , Challenged)
- Website Traffic
- Utility Bill Analysis
- Finance
- Time series forecasting of project costs and benefits
- Cash Flow Summary
- Top 10 Departments by Expense
- Expense by Category
- Total Expenses Trend
- Sponsored Project Activity by Fiscal Year



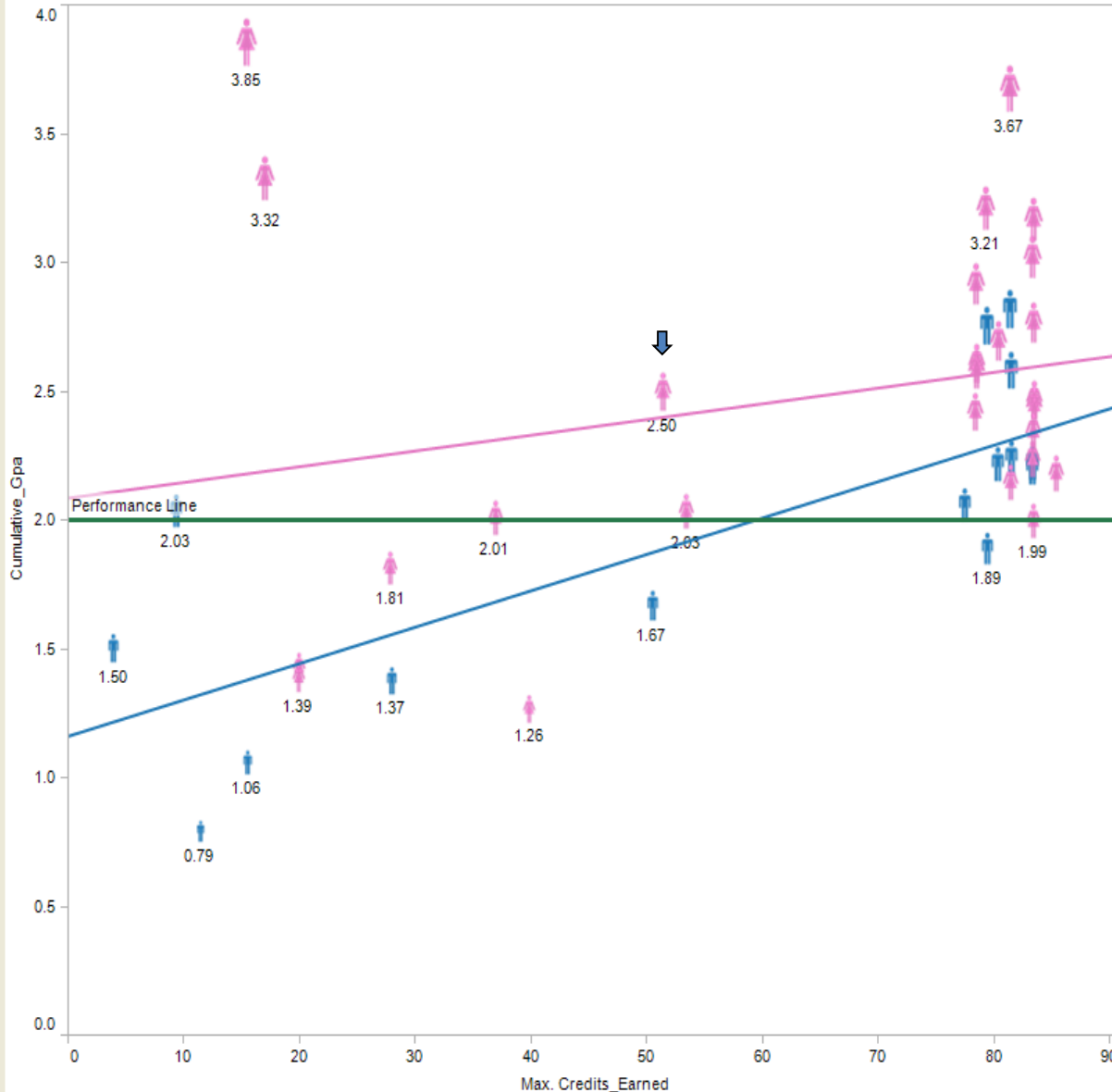
Gallery View 01 (vertical)
© 2013 Tableau Software

Enrolment Dashboard



Student Performance Dashboard

Credits Completed and GPA ASCM (September 2000)



Student Names

Student_Name	Cumulative_Gpa
SMITH,Nginaa	3.852
SEECHARAN,Nicole	3.672
GITTENS,Marissa	3.324
WILLIAMS,Karlene	3.208
JOSEPH,Marisa	3.165
BROWN,Rachael E	3.018
FIGARO,Letasha	2.844

Max. Cumulative_Gpa
0 to 4

Credits_Earned
0 to 113

Gender
 Female
 Male

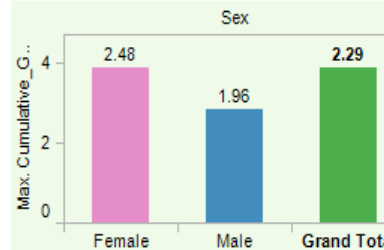
Sex
 Null
 Female
 Male

Short Name
 ASCM
 ASFBM
 ASHO
 ASTM
 CAM
 CB
 CBS
 CCA
 CCKS

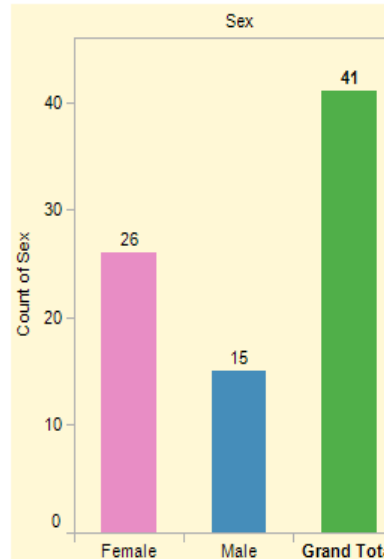
Start Date
 Null
 September 1977
 September 1978
 September 1988
 September 1993
 August 1997
 September 1997
 February 1998
 August 1998

Current_status
 Completed
 Dismissal
 incomplete
 Withdrawn

Class GPA

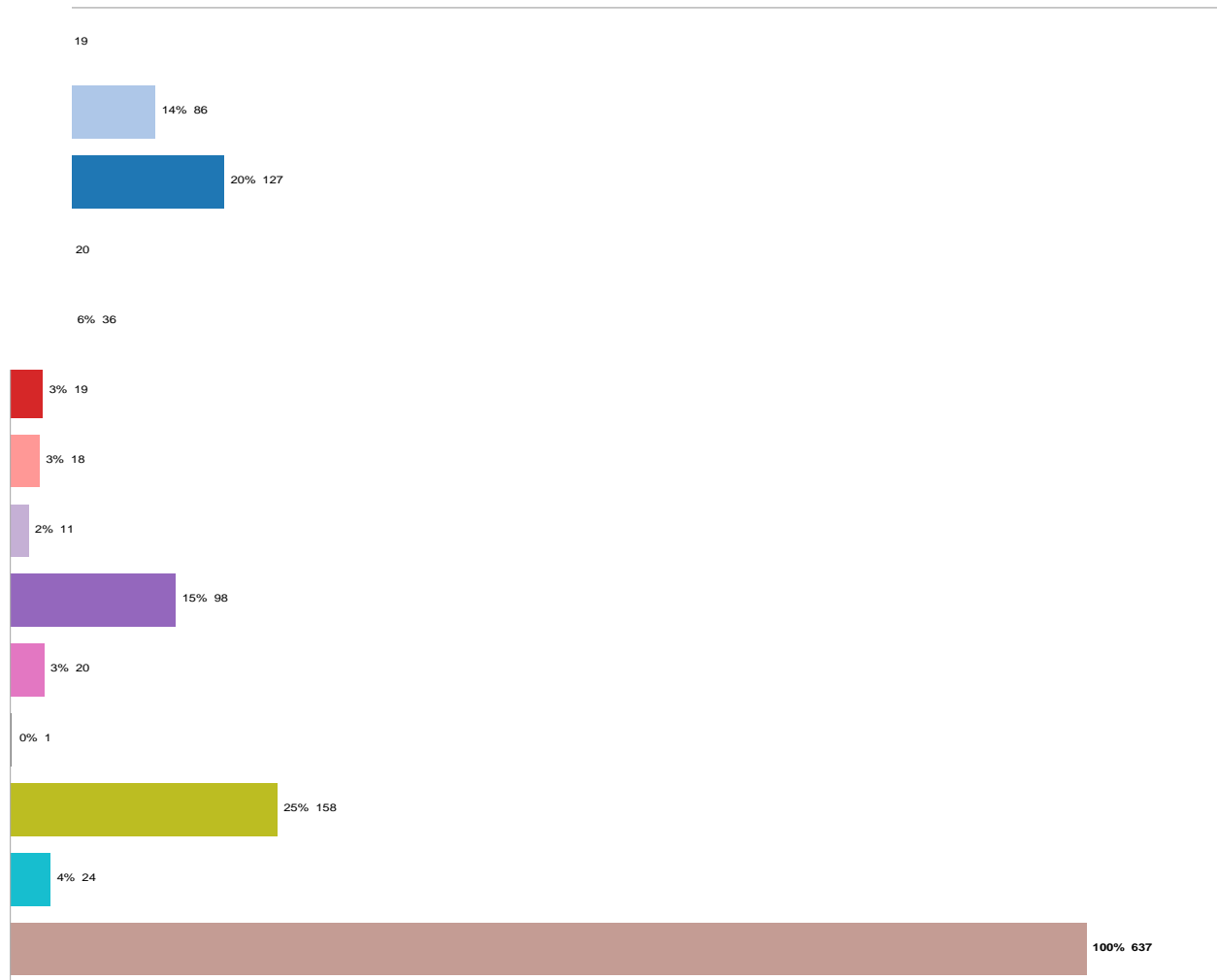


Total by Gender



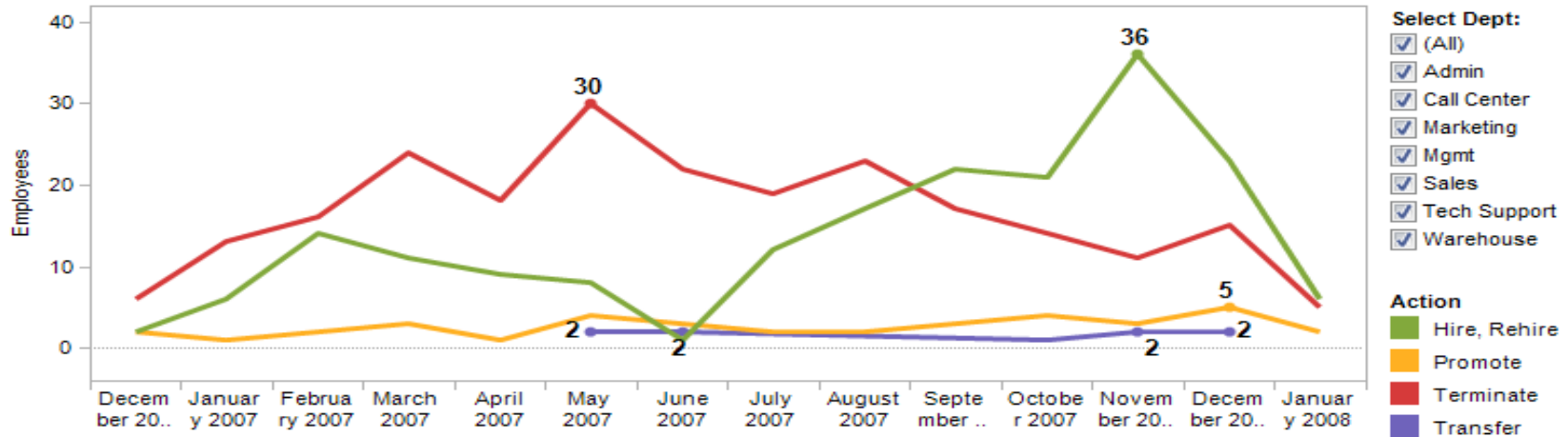
Application Dashboard

Information: 100% (637)

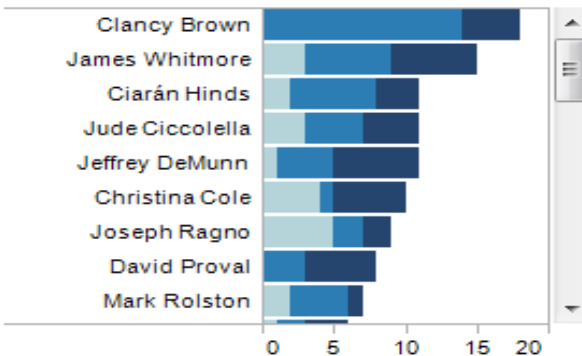


Human Resources Example

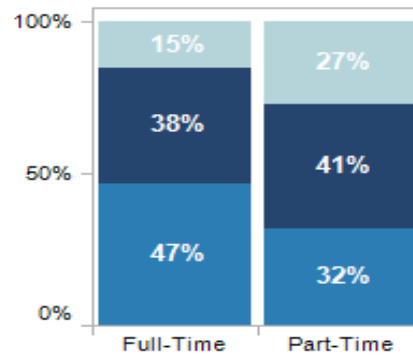
Staffing Trends



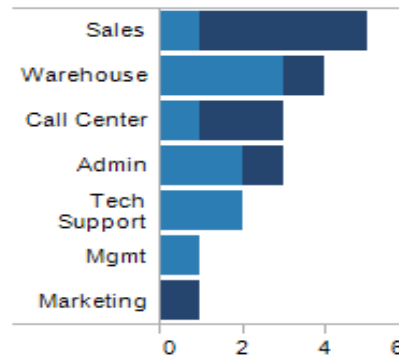
Performance by Supervisor



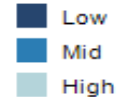
Performance by Type



Terminations



Rating



Share →



↓ Download



Forrester Research Inc, Interview on the adoption of TABLEAU

Forrester conducted in-depth interviews with three customers: a national financial-services firm, a major teaching hospital and an online media firm. Forrester documented an ROI of 127% and a 13-month payback period.

Forrester found the following benefits:

- Increased user adoption of business intelligence
- Increased standardized reports by 400%
- Reduced report creation times by 87.5%
- Reduced report distribution, storage and duplication costs and simplified publishing of reports
- Incurred no training costs to adopt Tableau
- Freed up BI analysts to perform higher-value tasks
- Realized process improvements from use of visualization in root-cause analysis

THE CONSOLIDATION EXERCISE

OBJECTIVES

**To allow staff access to one database that houses all returning students' information.
This will also facilitate the accurate production of reports.**



BENEFITS

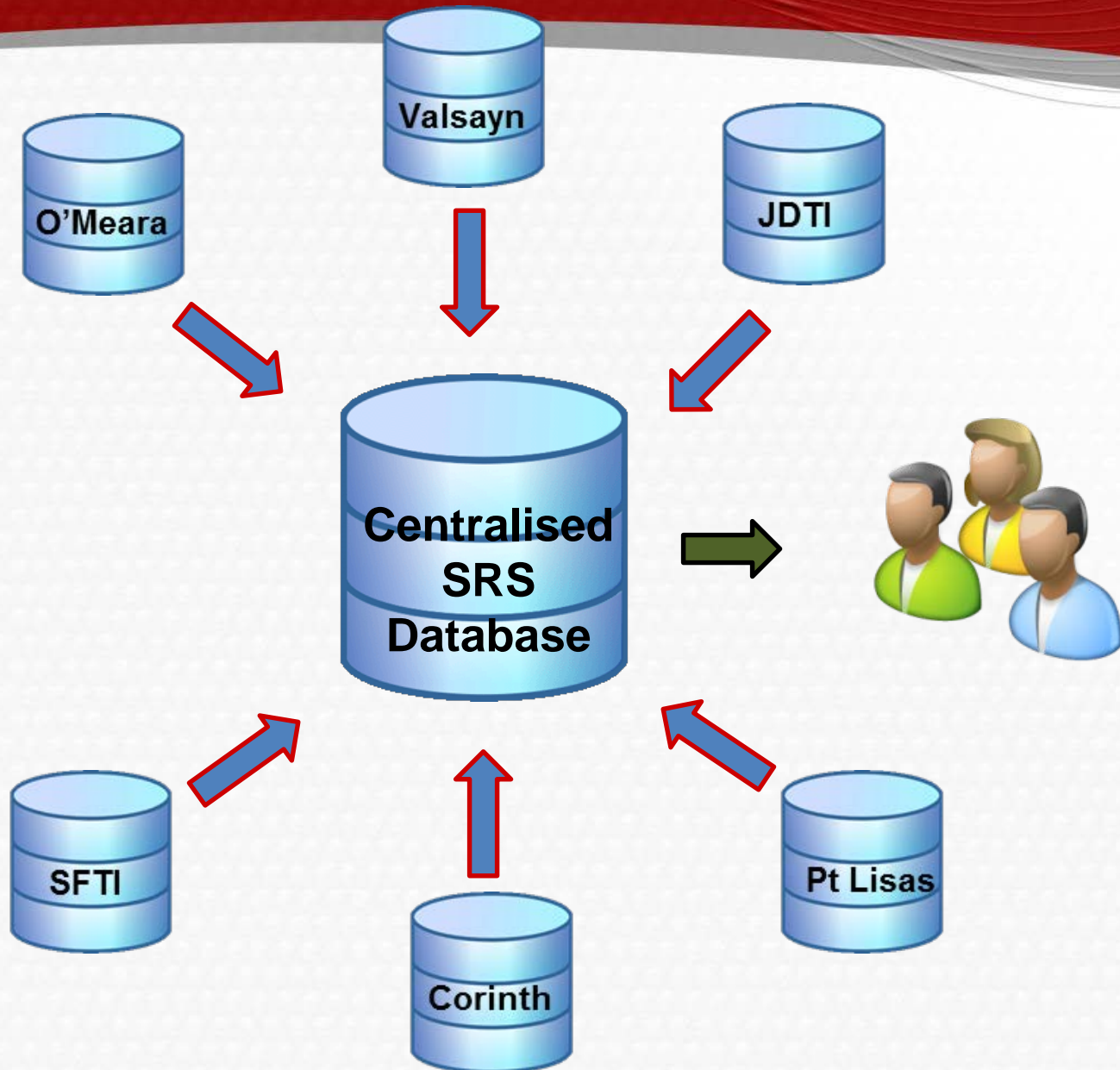
- **Eliminates redundancies and reduces inaccuracies of data**
- **Faster reporting on students' profiles, grade slips, transcripts and statistical information**
- **Promotes efficiency and data integrity by maintaining one database**
- **Allows for a smoother transition of data from SRS to SIS**

THE TEAM

- **Manager, Knowledge and Compliance Systems**
- **Registrar**
- **Academic Standards Unit**
- **Registry Staff**
- **ITS Technical Personnel**
- **Academic Staff**



THE PROCESS



The Consolidation of the SRS databases

➤ Check for Anomalies

Course Merged by Code

Course_c..	Course_title	Cours..	COR	JSTI	Location			
					OM	PTL	SFTI	VAL
3GMO110M	3G Mobile Systems	1			1	1		
AAWM210D	Apiculture, Aquaculture and Wildlife Management	3			3			
ACCT207	Accounting For Decision Making	4		4	4	4	4	4
ACCT210	Financial Accounting I	4		4	4	4	4	4
ACCT303	Engineering Economics	3		3		3	3	3
	Principles of Accounting	3			3			
ACTA113D	Acting for Animation	1		1				
ADMN110	Sports Administration	3	3					3
ADMN110B	Management of Physical Education and Sport	3	3					
	Sport Administration	3					3	3
ADMN110C	Introduction to the Organization and Administration of Sport	3					3	

The Consolidation of the SRS databases

➤ Check for Anomalies

Course Merged by Code

Course_c..	Course_title	Cours..	COR	JSTI	Location			
					OM	PTL	SFTI	VAL
AGSC212E	Business of Agriculture III	3	3					
AGSC213E	Animal Production 1 - Practical Management of Different Classes of Livestock	3	3					
	Animal Production I - Practical Management of Different Classes of Livestock	3						3
AGSC214E	Agricultural Production II - Anatomy and Physiology of Animals	3	3					
	Agricultural Production II - Anatomy and Physiology of Animals	3						3
AGSC215E	Soils I - Soil Chemistry	3	3					3
AGSC216E	Soils II - Soil Physics	3	3					
	Soils II - Soil Physics	3						3
AGSC310E	Agricultural Science I	2	2				2	2
AGSC311E	Agricultural Science II	3	3					3
AGSC312E	Crop Production I - Practical Management of a Range of Crops	3						3

The Consolidation of the SRS databases

➤ Repeat the Process

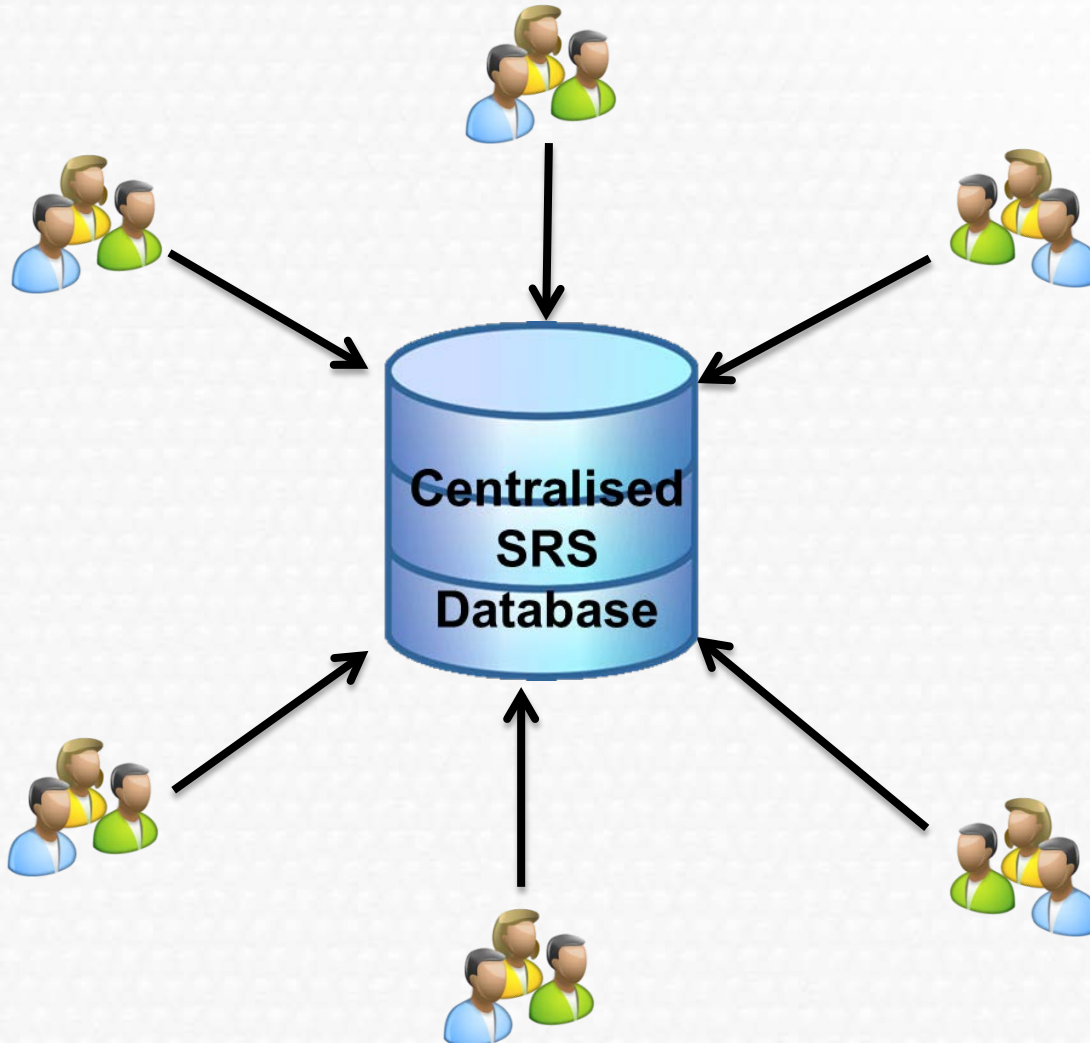
Course Merged by Code

Course_c..	Course_title	Cours..	COR	JSTI	Location			
					OM	PTL	SFTI	VAL
ANBL111D	Animal Biology	2			2			
ANEL210B	Analog Electronics	3			3		3	
ANHD 110D	Animal Health and Diseases I	3			3			
ANHD111D	Animal Health and Diseases II	3			3			
ANHD113D	Animal Health & Disease	3			3			
ANHN210D	Animal Health and Nutrition	3			3			
ANLS301	Process Analyzers I	5		5	5	5	5	5
ANLS320	Industrial Analyzers I	4		4	4	4	4	4
ANLS325	Industrial Analyzers II	4		4	4	4	4	4
ANLS351	Process Analyzers II	2		2	2	2	2	2
ANME110D	(DME003) Analytical Methods 1 & 2	8			8			



The Consolidation of the SRS Databases

➤ Link all Users to the New Database



THANK YOU



THE UNIVERSITY OF TRINIDAD AND TOBAGO

