

# STAT – STudents Analysis Toolbox

**IHL CIO FORUM 2018**



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# AGENDA

1. STAT – Objective & Vision
2. Solution
3. Our Achievements
4. Benefits
5. What's Next

# 1. STAT – Objective & Vision

What we want to achieve?

## Objective & Vision

**ST**udents **A**nalytics **T**oolbox (STAT) is project designed and developed by School of IT to **leverage on data to help staff make informed decision**; it is an interactive data analytics dashboards for **data-driven decision making and insights** in academic management for various stakeholders including Course Managers, School Directors, Course Coordinators, Personal Mentors and Lecturers & Tutors.

Using **Data** to help staff  
make informed decision!

# Objective & Vision

## LEARNING

Enhance students' self-regulated learning to nurture them to be independent and responsible learners

## TEACHING

Explore and validate our pedagogies for effective teaching

## ACADEMIC MANAGEMENT

Enhance academic and administrative data-driven decision making and forecasting

*Illuminating Our Teaching and Learning using Data*

# NYP T&L Analytics Vision

## STAKEHOLDERS



Parent



Student



Lecturer



PEM & CC



CM



Senior Mgt



Registrar



Researcher

## ANALYTICS

On Demand Analytics

Prescriptive	How can we make it happen?
Predictive	When will it happen?
Diagnostic	Why did it happen?
Descriptive	What happened?

Identifying risky students  
Uncover learning style of students  
Evaluate teaching effectiveness

Clustering, Classification, Association,  
Text Mining and Regression

Dashboards, Aggregation  
and Visualization



## DATA SOURCES



### Student Information Systems

- SIMS
- SES
- Outreach Activities\*
- JAE\*
- GES\*
- PEM\*



### Learning Data Systems

- SIMS
- Timetabling
- SAS\*
- IRS\*
- CFS\*
- FYP/ITP\*
- Skills Future/ELP\*
- MARS\*
- CCA/Achievements
- PEM\*



### Fine-grained Data

- Blogs
- Learning logs
- Keystrokes
- Eye gaze
- Reflection logs
- Sensors
- Wearables and cameras

\* SIT systems

# 2. Solution

How do we achieve it?



# Platform – SAS Visual Analytics

Interactive reporting  
and dashboards



A single application for  
reporting, data  
exploration and analytics



 **sas** VISUAL  
ANALYTICS



Self-service analytics  
for everyone

# Challenge – Multiple Data Sources

## Student and Learning Related Data

Joint Admission  
Exercise

Student Information Management System  
(SIMS)

Module Assignment  
System\*

Student  
Engagement  
Survey

Graduate  
Employment  
Survey

Blackboard LMS

Timetabling System

Outreach\*

CCA &  
Achievements

Course Feedback  
System

Interim Result  
System\*

Personal Mentor  
System\*

SkillsFuture, ELP &  
Structured  
Internship\*

Final Year Project  
& Internship  
System\*

Student Attendance  
System\*

## Fine Grained Data

Blogs

Reflection  
Logs

Learning Logs

Keystrokes  
and Mouse  
Clicks

Eye Gaze  
Data

## Challenge – Multiple Data Sources

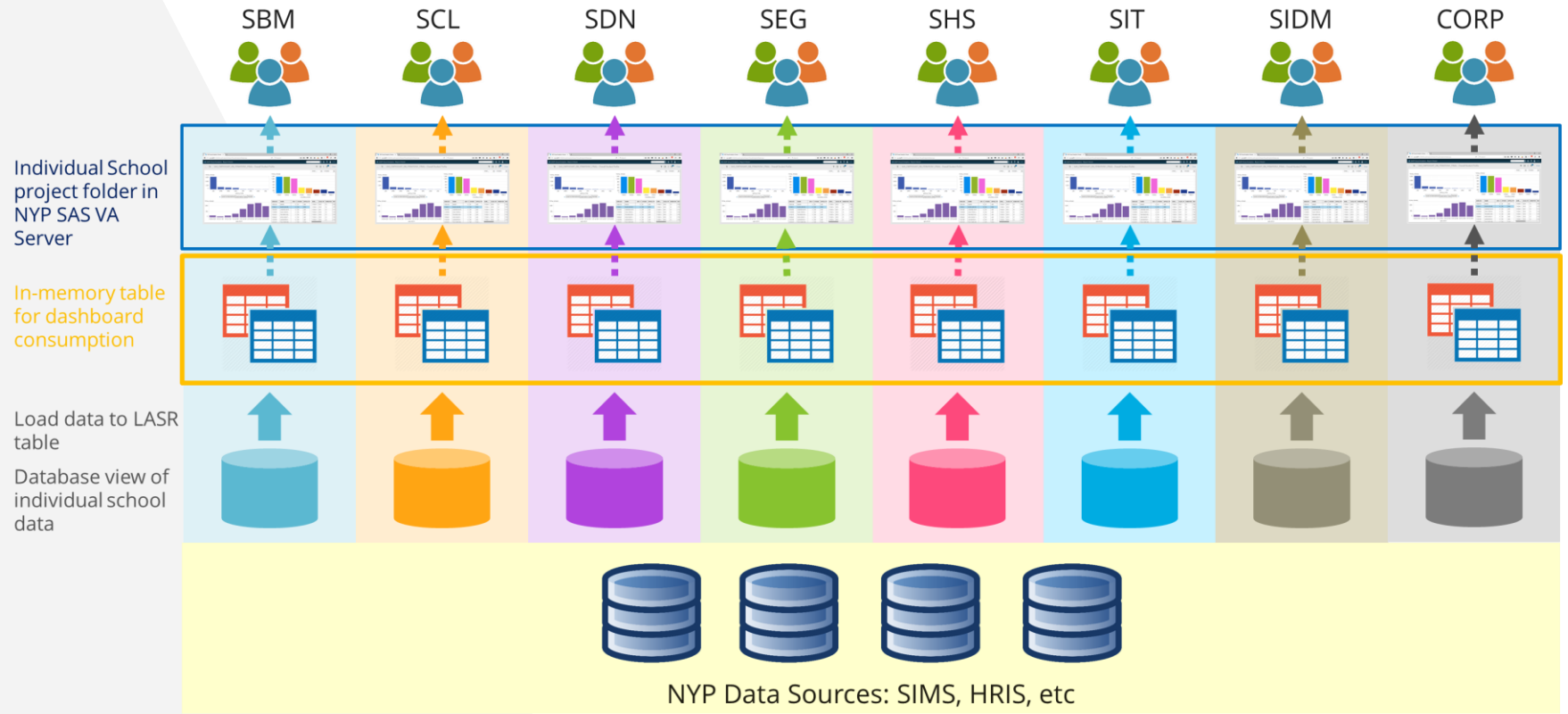
### Data Mashup of different Data Source

Data comes from many different system e.g. SQL, Oracle, Excel, etc

### Data Privacy

Each school only see its own school data

# Solution – Data Provisioning



## Challenge – User Adoption



### Dashboard Creation

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Is it what the user need?



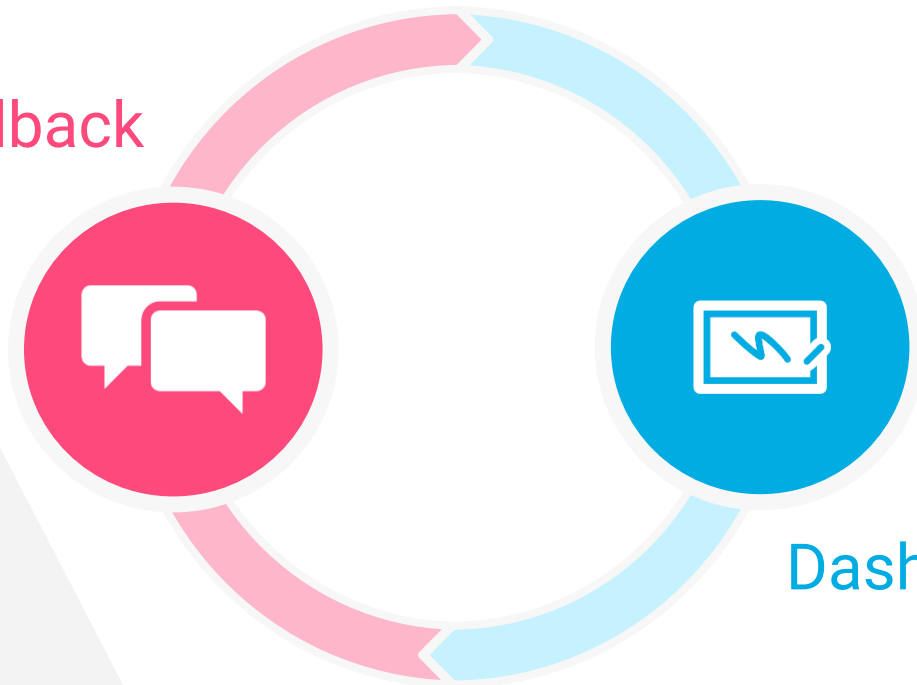
### Self-Service BI

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Will the user be able to create their own dashboard?

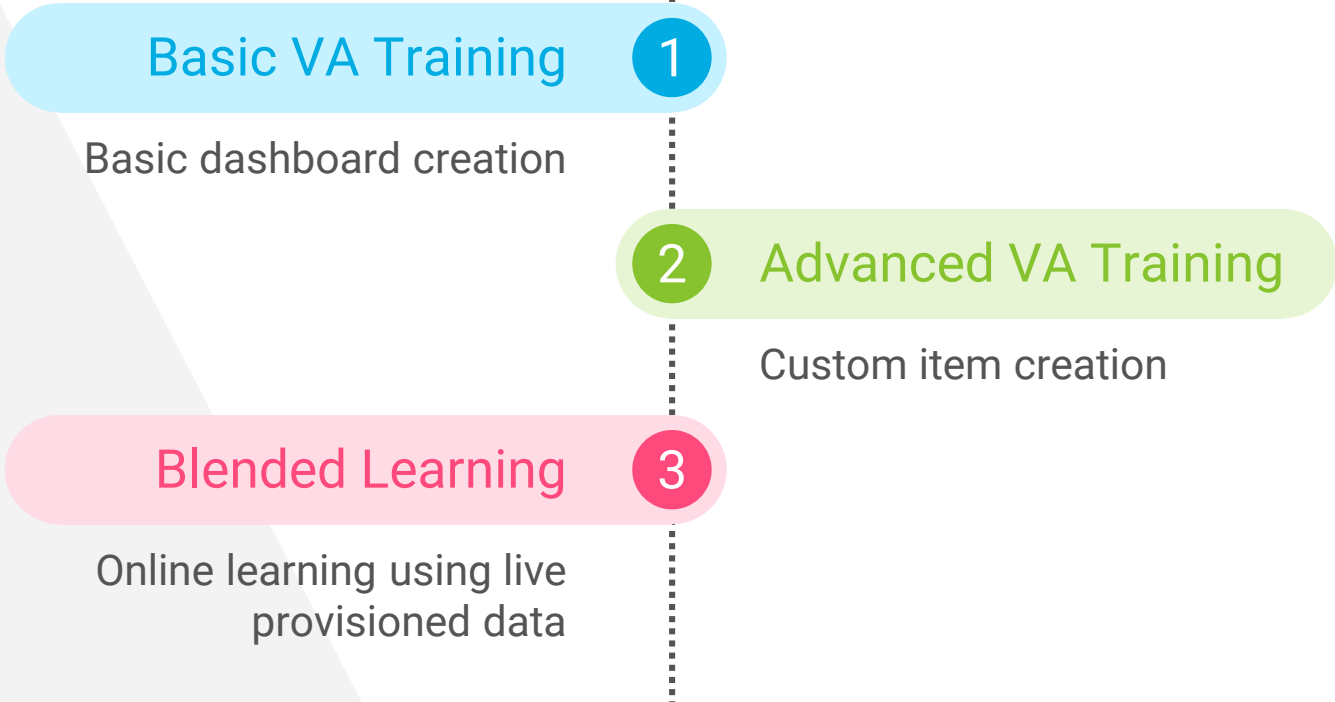
## Solution – Dashboard Creation

User Group Feedback

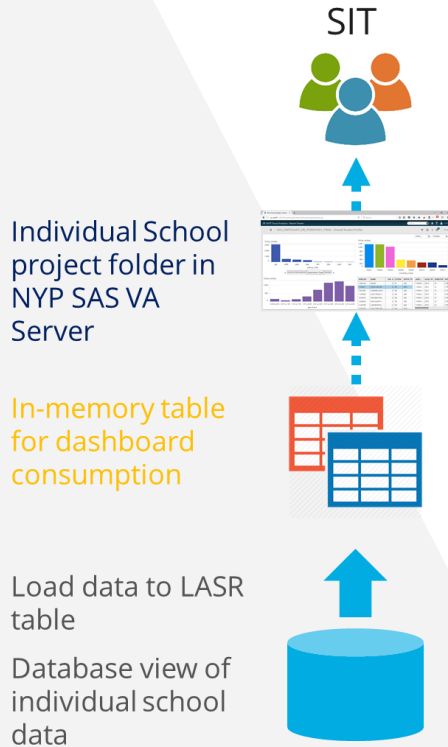


Dashboard Creation

# Solution - Training



# Solution – Self-Service BI



- 1 Base dashboard deploy to school folder
- 2 User can create a copy of the dashboard into their own folder and custom it to their needs
- 3 User can create their own data query based on the data provision



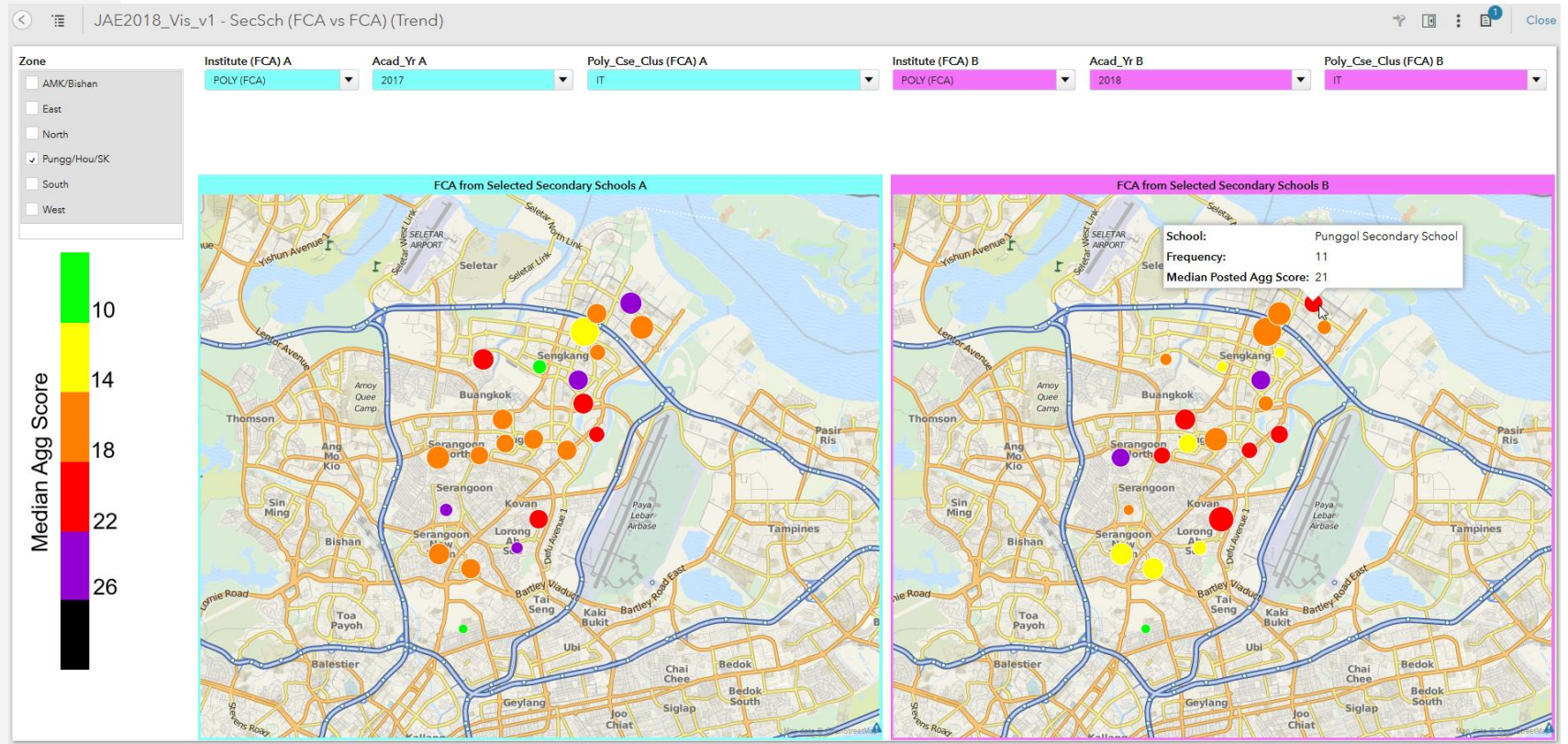
# 3. Our Achievements

What have we achieved?

# Dashboards for Course Managers



# JAE Dashboard



# Course Manager Dashboard

SAS® Visual Analytics - Report Viewer

Search [ ] [ ] [ ] [ ] LIM AI HUEY

CM\_DASHBOARD\_V1 - Overall Student Profile

Course Filter [ ]

Cohort: 2016 Student Status: STUDENT STATUS

Top Percentile: 10% 100% Bottom Percentile: 10% 100%

**TOTAL INTAKE**

APPLN_TYPE	Total Intake
APPE	~5
DAE	~40
DPA	~10
JAE	~320
JPAE	~100
JSAE	~5
PFF	~20

Local vs International Application Type Gender

**TOTAL INTAKE**

COURSE_CODE	Total Intake
ITDF01	30
ITDF03	~19
ITDF04	~16
ITDF07	~8
ITDF08	~19
ITDF10	~6
ITDF11	~2

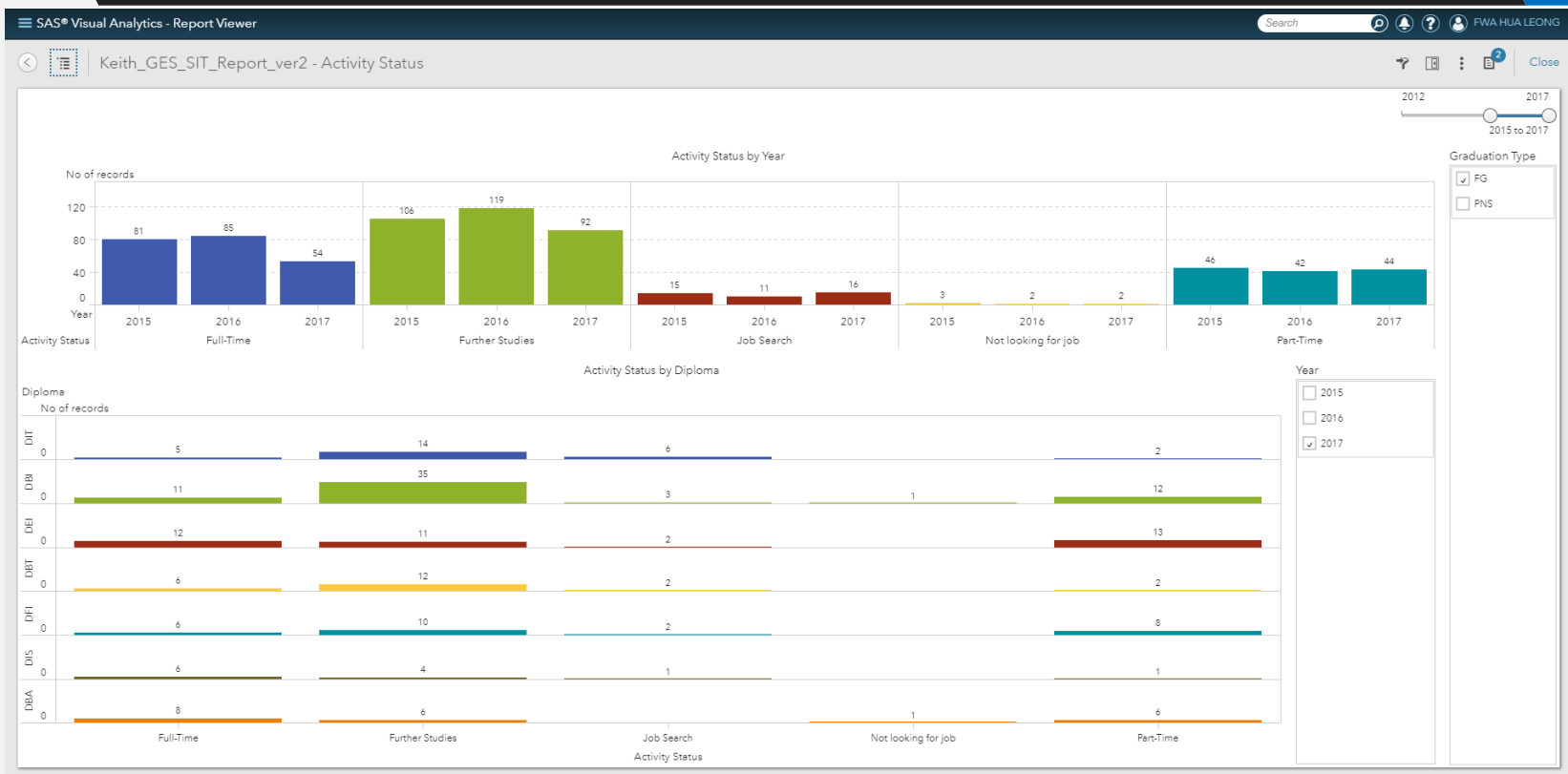
**TOTAL INTAKE**

gpa_band	Total Intake
0.00 to 0.50	~4
1.01 to 1.50	~6
1.51 to 2.00	~7
2.01 to 2.50	~21
2.51 to 3.00	~24
3.01 to 3.50	~21
3.51 to 4.00	~18

ADM_NO	NAME	GPA	CITIZEN	APPLN_TYPE
1184007	POH JIN HUI	4.000	SG	JPAE
1184008	TOH JUN JIE	3.980	SG	JPAE
1184009	JUSTIN BOH L.	3.980	SG	JPAE
1184010	HE HONG	3.960	SG	JPAE
1184011	HO FRANCIS L.	3.910	SG	JPAE
1184012	REBECCA L.	3.910	SG	JPAE
1184013	TAN HONG H.	3.910	SG	JPAE
1184014	LEE JIN HUI	3.890	SG	JPAE
1184015	ANG HUI HUI	3.850	SG	JPAE

ADM_...	ACAD_YR	SEMESTER	MODULE_CODE	MO
1184007	2017	S1	ITX200	NAT
1184007	2016	S1	IT1501	CO
1184007	2016	S1	IT1506	DAT
1184007	2016	S1	ITX100	PILL
1184007	2017	S1	IT2601	DAT
1184007	2016	S1	IT1606	LAV
1184007	2016	S1	ITX101	DEV
1184007	2016	S1	IT1507	WEI
1184007	2017	S1	ITP281	E-BI

# GES Dashboard



# 4. Benefits

How has our solution helped us?

# Benefits

## *Visual Representation of Learning Data*

For easier interpretation of data



## *Discover Insights & Uncover Trend*

For better academic process improvement and strategy formulation



# 5. What's Next?

What we plan to do next?



# Next Developments

## CET Dashboard

Consolidated view of CET courses and training hours across all schools over the years.  
Interfaces across LLIMS, SIMS and ACI system

## Enhanced STAT with predictive analytics

To add in module level information and more granular course information e.g. assessment components.  
Allow lecturer to analyse student performance across modules, type of modules and across the various assessment components.

## Course Feedback Sentiment Analysis

Understand learners' learning behaviour towards courses and instructors can improve to enhance the course structure and teaching pedagogy.

## Curricula Analytics

Offers enhanced insight on syllabi thru' advanced visualization and analytics  
Identifies potential areas of improvements in syllabi  
Alignment of syllabi with learning outcomes

THANK YOU!