IF AT FIRST YOU DO NOT SUCCEED, CHANGE YOUR ACADEMIC STRUCTURE

SESSION 4504
10/10/2018

PRESENTER

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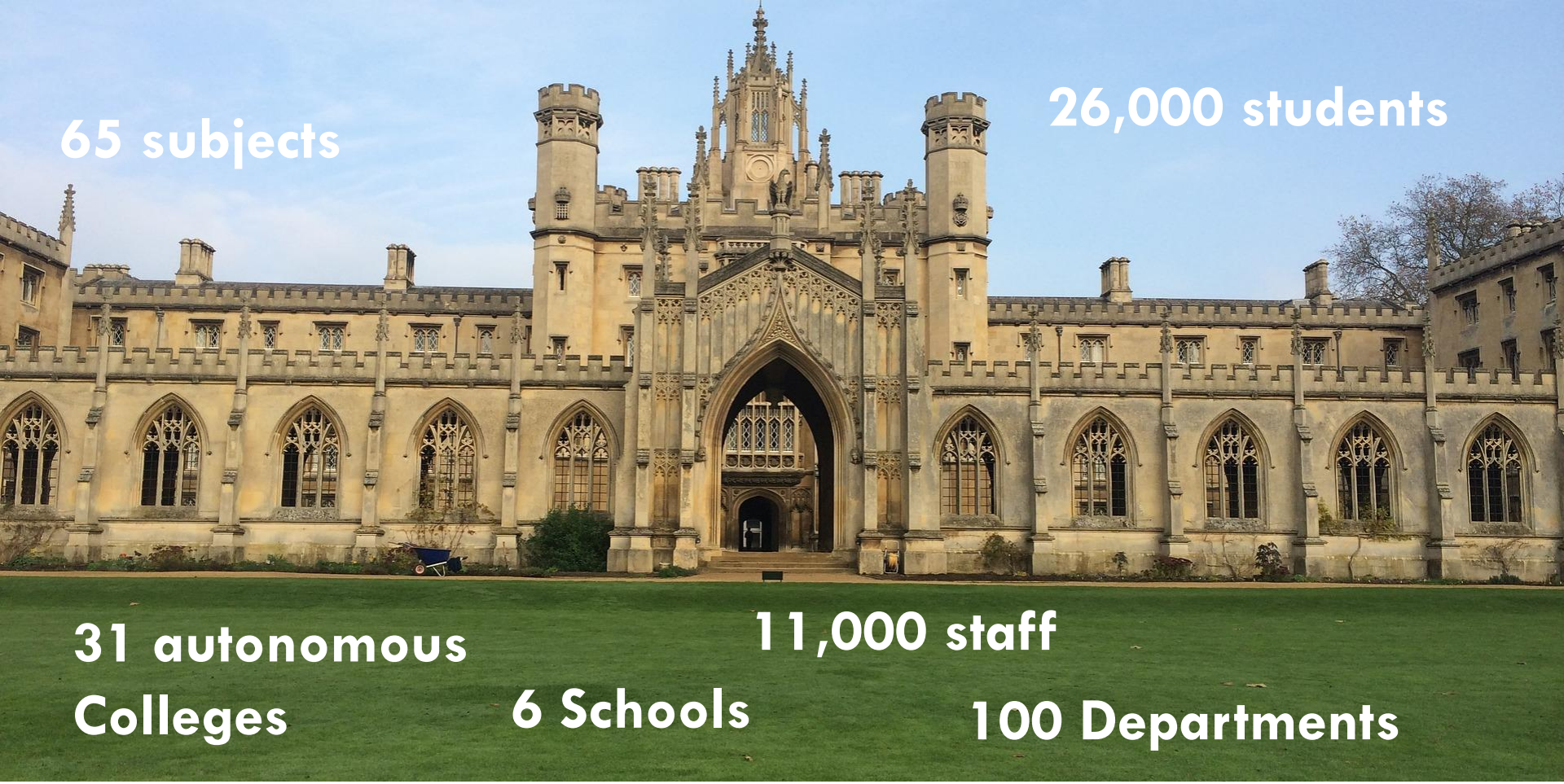
I am an experienced functional analyst working on Oracle People Soft Campus Solution for the past 12 years.

I completed my Bachelor's Degree (Hons) in Computing at Open University in 2014.

I now lead a professional team of 12 functional analysts.



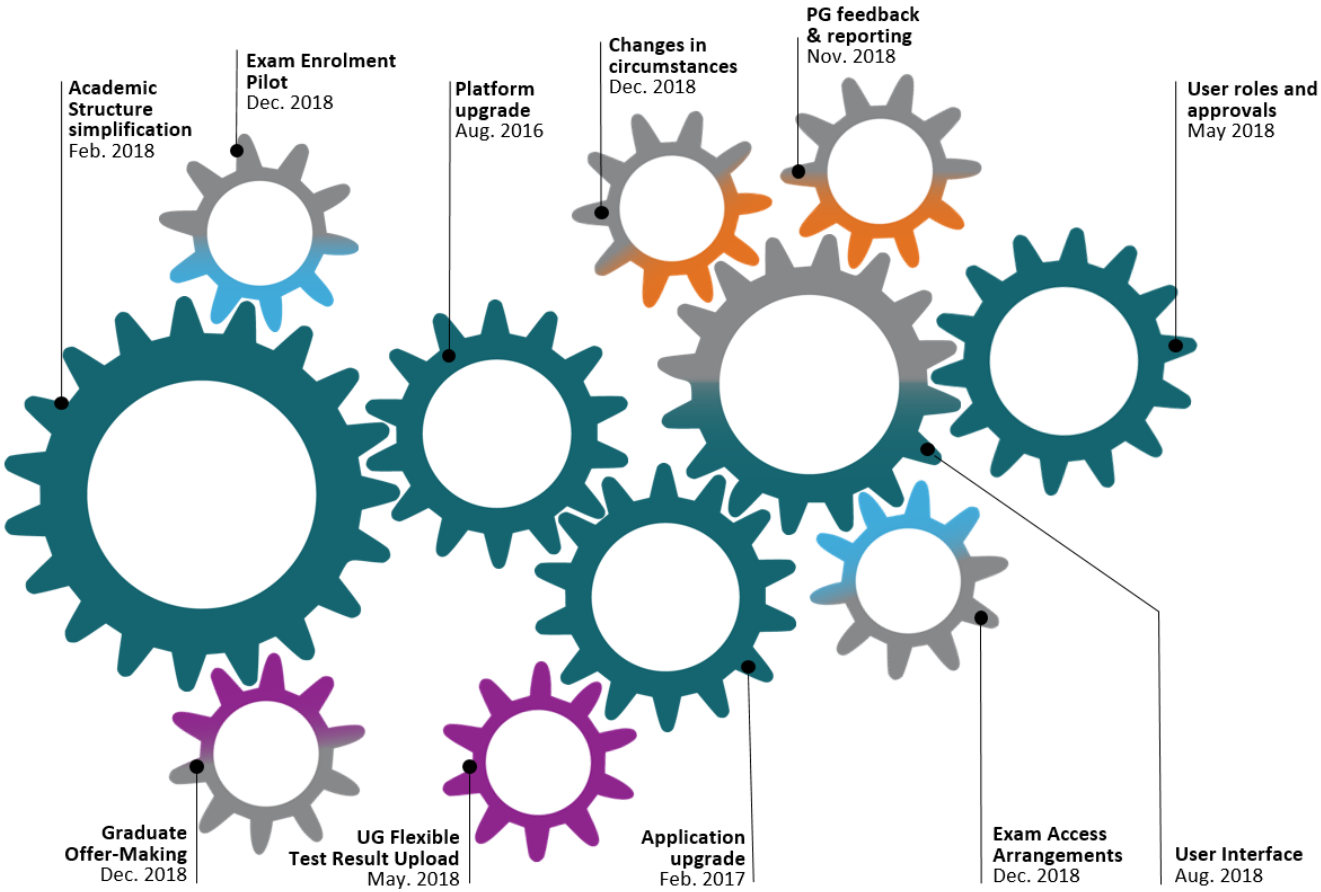
UNIVERSITY OF CAMBRIDGE

Confederation of Schools, Faculties, Departments and Colleges

CAMBRIDGE & ORACLE

Since 2004
Oracle/PeopleSoft
Campus Solutions 9.2
Preparing to install image 10 in October.
PeopleTools 8.55.25

IMPROVEMENT PROGRAMME



MARRIAGE MADE IN HEAVEN

I was wearing two hats during this project; project manager and functional analyst (scout)

OVERVIEW

1

Functional analysis

2

Technical
data conversion

4

Project management

3

Communication
and user
engagement

WHAT IS THE ACADEMIC STRUCTURE?

Academic Structure is a hierarchy of:

- Academic Career
  - Academic Programme
    - Academic Plan
      - Academic Sub-plan

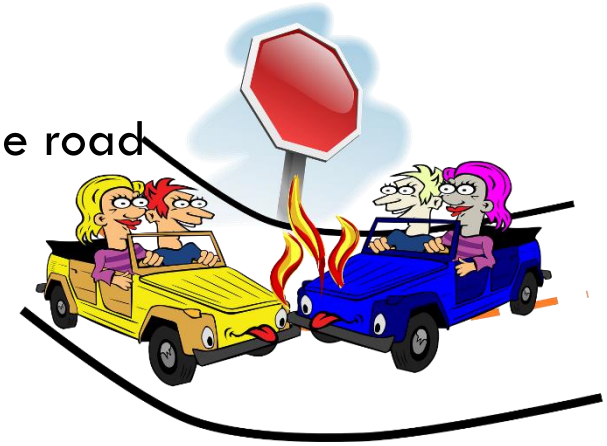
There are many other system entities that are also part of the academic structure but these four are the main focus of the project as they underpin the Student Record.

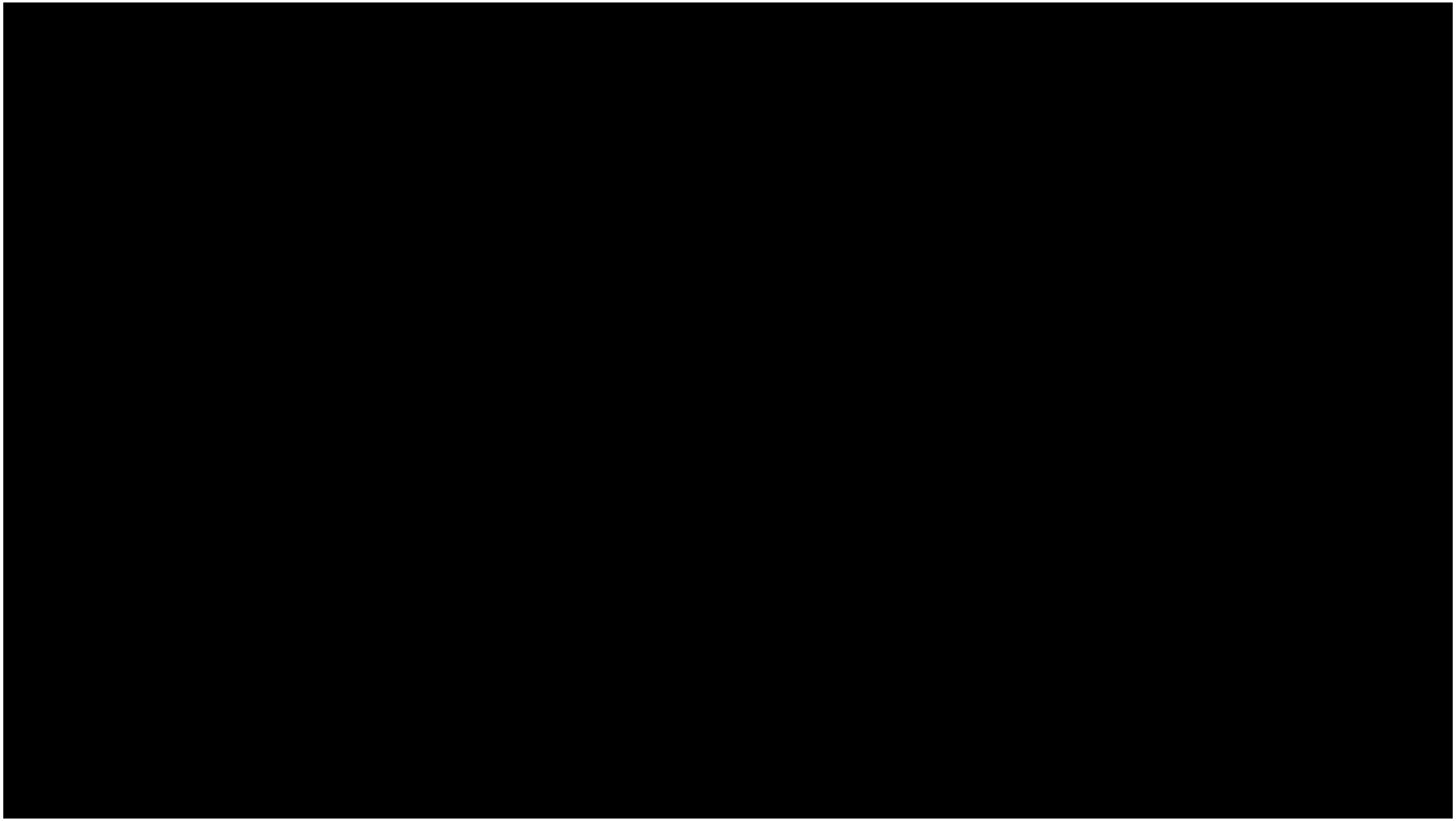
What is CamSIS?

Cambridge Student Information System

WHAT WENT WRONG IN 2004?

- When we first setup the academic structure in 2004 we had two different consultants setting up the graduate and undergraduate students. We will blame them as they are no longer with us ☺
- Over the years we found that graduate structure worked better than the one for undergraduates
- We found reporting and training users difficult
- For 10 years we were driving on both sides of the road





ACADEMIC RESTRUCTURING PROJECT




FUNCTIONAL ANALYSIS

4 Functional analysts focused on data modeling, system analysis, testing and in depth data analysis.

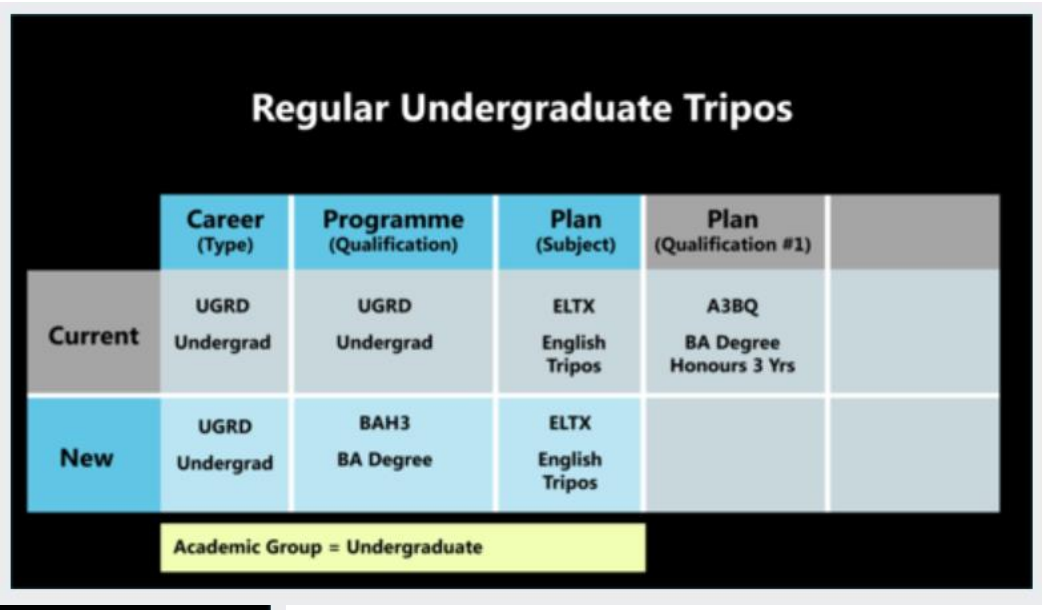
WHY DID WE CHANGE IT?

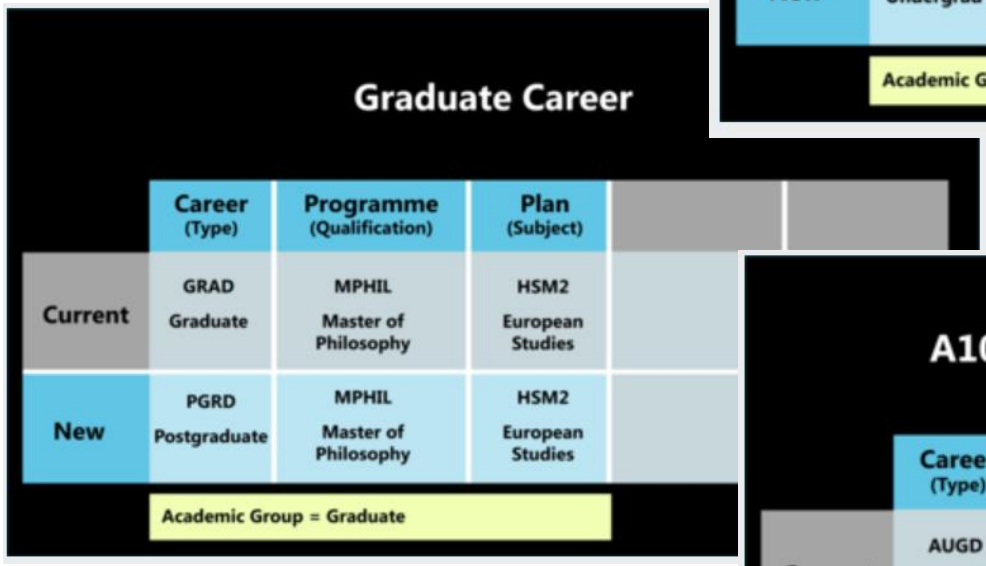
- Undergraduate and Graduate students had different academic structures
- Academic Career – subject changes mean creation of new programme plan stacks (skewed reporting statistics and time consuming)
- Academic Programme – was not used for Undergraduates (all had UGRD value)
- Academic Plan – Undergraduate students had multiple academic plans which made reporting difficult (multiple rows were returned for each student)
- Academic Sub Plan – some courses had subject stored in the Sub Plan making reporting across cohorts difficult

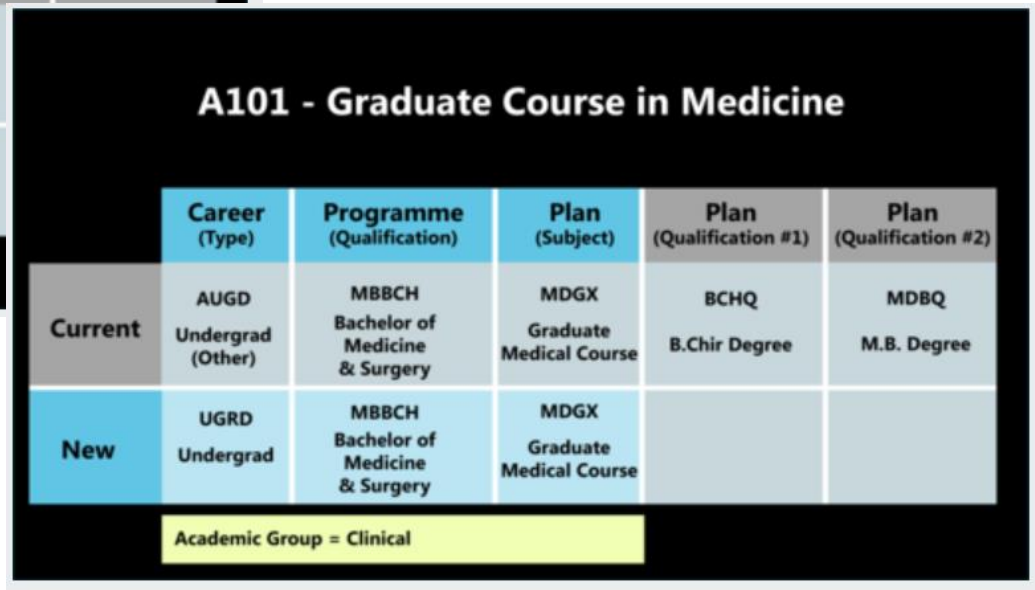
WHAT DID WE CHANGE?

- Academic Careers have been reduced from 9 to 5 so that similar types of students are grouped together
- The Academic Programme for all students now represents a student's degree
- The Academic Plan for all students now represents a student's subject. A student will have only one Academic Plan for each of their programme plan stacks
- Academic Sub Plans have been removed. Some courses have been setup inconsistently and student subject was in the Sub Plan field instead of Academic Plan
- We populated the Academic Group field for better reporting

EXAMPLES

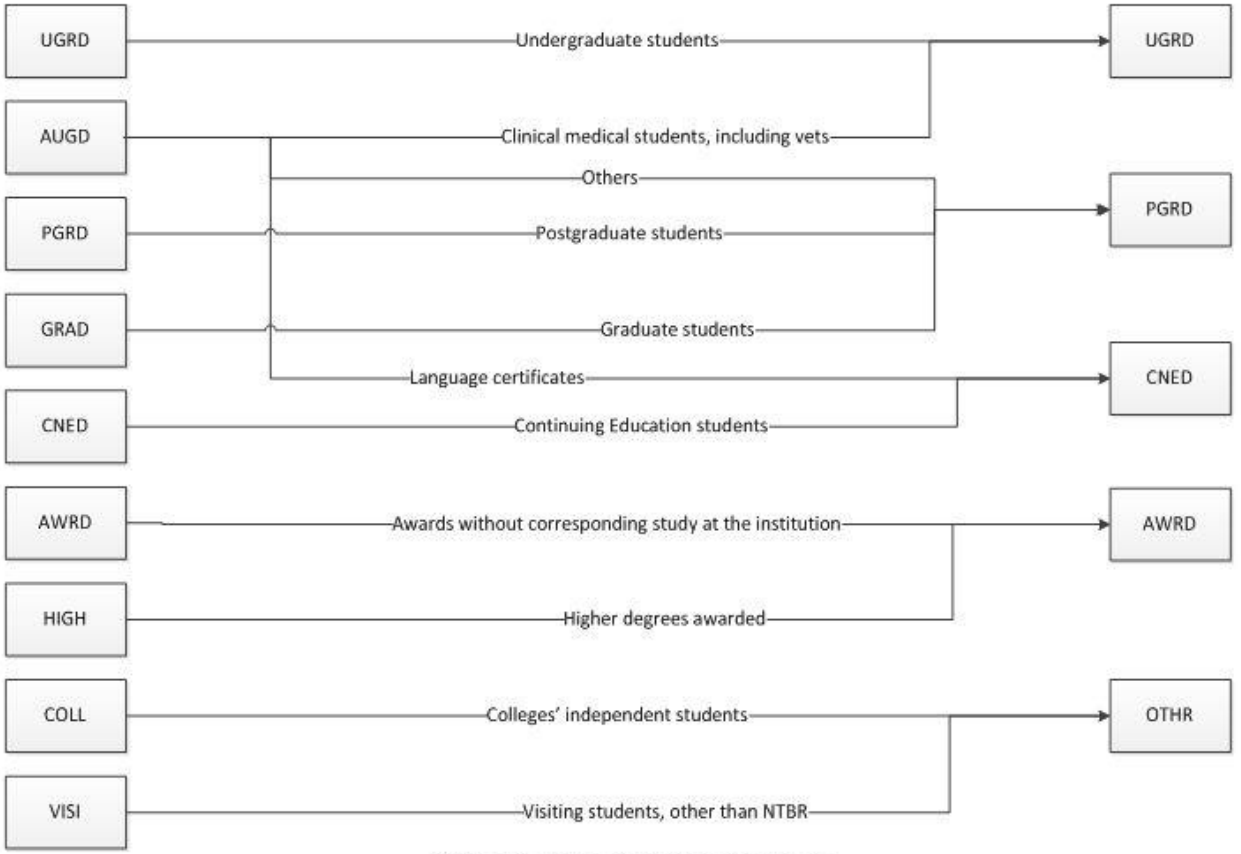






New is our current academic structure now. These screen grabs were done before we went live.

ACADEMIC CAREER MAPPING



WHAT ARE THE BENEFITS?

- Faster, more accurate and easier reporting for users
- Improved data quality for example transcripts
- Quicker to setup fees
- Can adopt vanilla HESA localisation
- Simplified record keeping
- Fewer customisations to reduce cost of system maintenance
- Simpler user training and documentation

SAMPLE OF THE MAPPING TABLE

Current Academic Career	Current Academic Programme	Current Academic Plan 1	Current Academic Plan 2	Current Academic Plan 3	Current Academic Sub-Plan	New Academic Career		New Academic Programme		New Academic Group		New Academic Plan	
PGRD	PGDIP	MLD2				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	MLD2	Linguistics
PGRD	PGDIP	NUD1				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	NUD1	Nutrition
PGRD	PGDIP	ODD1				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	ODD1	Development
PGRD	PGDIP	PHD1				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	PHD1	Philosophy of Sci
PGRD	PGDIP	PSD1				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	PSD1	Polar Studies
PGRD	PGDIP	TRD1				PGRD	Postgraduate	PGDIP	Diploma	PGRD	Postgraduate	TRD1	& Rel Stud
UGRD	MBBCH	MDGX				UGRD	Undergraduate	MBBCH	Medicine &	CLIN	Clinical	MDGX	Course
UGRD	UGRD	A1BQ	AATX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	AATX	Tripos
UGRD	UGRD	A1BQ	ARTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	ARTX	Tripos
UGRD	UGRD	A1BQ	ASTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	ASTX	ASNC Tripos
UGRD	UGRD	A1BQ	CETX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	CETX	Engineering
UGRD	UGRD	A1BQ	CLTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	CLTX	Classical Tripos
UGRD	UGRD	A1BQ	CSTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	CSTX	Tripos
UGRD	UGRD	A1BQ	ECTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	ECTX	Economics Tripos
UGRD	UGRD	A1BQ	EDTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EDTX	Education Tripos
UGRD	UGRD	A1BQ	EDTXEL			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EDTXEL	with English
UGRD	UGRD	A1BQ	EDTXHS			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EDTXHS	with History
UGRD	UGRD	A1BQ	EETXBS			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EETXBS	w/Bio Sci)
UGRD	UGRD	A1BQ	EETXTH			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EETXTH	w/Rel Stud)
UGRD	UGRD	A1BQ	EGTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	EGTX	Tripos
UGRD	UGRD	A1BQ	ELTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	ELTX	English Tripos
UGRD	UGRD	A1BQ	ESTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	ESTX	Sciences Tripos
UGRD	UGRD	A1BQ	GETX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	GETX	Tripos
UGRD	UGRD	A1BQ	HATX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	HATX	Tripos
UGRD	UGRD	A1BQ	HPTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	HPTX	Sciences Tripos
UGRD	UGRD	A1BQ	HSTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	HSTX	Historical Tripos
UGRD	UGRD	A1BQ	LETX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	LETX	Tripos
UGRD	UGRD	A1BQ	LNTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	LNTX	Linguistics Tripos
UGRD	UGRD	A1BQ	LWTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	LWTX	Law Tripos
UGRD	UGRD	A1BQ	MATX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	MATX	Tripos
UGRD	UGRD	A1BQ	MDQQ	MDTX		UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	MDTXM	Tripos (Med)
UGRD	UGRD	A1BQ	MDTX	VTQQ		UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	MDTXV	Tripos (Vet)
UGRD	UGRD	A1BQ	MDTY			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	MDTY	Tripos
UGRD	UGRD	A1BQ	MGTX			UGRD	Undergraduate	BAAH2	Affil 2yrs)	UGRD	Undergraduate	MGTX	Studies Tripos

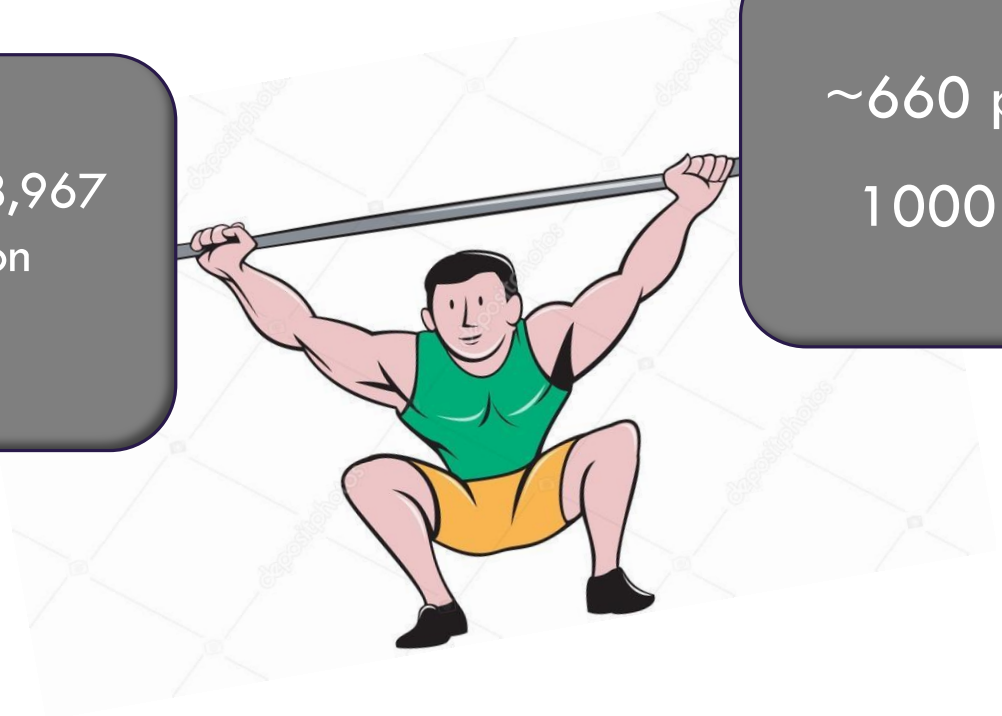
TECHNICAL DATA CONVERSION

Focused on building data conversion programs, data cleanup and data reconciliation.

TASK

HUGE TECHNICAL EFFORT

Convert 56,918,967 by conversion programs



~660 programs

1000 queries

TECHNICAL SCENE

We created additional environments to allow project development, testing and modelling to be done alongside of the business as usual development.

We introduced a six month code freeze during which only critical fixes were allowed to go into the live system.

Technical and functional cut over and back out plans had been rehearsed many times.

Alongside the data conversion programmes there were also programmes producing data reconciliation reports to ensure all data was successfully converted and nothing was left behind.

DATA CONVERSION ITERATIONS

During the project data conversion had been rehearsed 8 times. By December 2017 we only had 1400 rows of data which had not yet been successfully converted.

Below is a sample of the tracking table including the time it took to complete. During the actual go live all records were converted by conversion programmes.

Bad data was deleted and at the end from 56.9 million we kept 40 million.

	October 2017	November 2017	December 2017
Duration	4 weeks	1.5 weeks	6 days
Rows successfully converted	39,783,988	39,915,451	40,072,205
Rows not converted successfully	2,423,997	40,082	1400

SAMPLE RECONCILIATION REPORT

```
UCCNV425 - Data Reconciliation Summary                        (F0313842)
CS_REG TOP-UP                       Run Date:2018-01-12-13.02.27.991995


--------- Reconciliation -------
Program   Table                    Rows Before       Rows After    Rows
Diff       Data Diff     Clob Diff       Total(+)     Done      Bal-
ance
-------------------------------------------------------------------------
-------------------------------------------------------------------------
--
UCCNV318
..........PS_ADM_APPL_DATA            448,046          448,046
0           119,422            0     119,422     119,422            0
..........PS_ADM_APPL_PLAN          2,210,126        2,115,114
(95,012)          124,242            0     219,254     219,254
0
..........PS_ADM_APPL_PROG          2,115,123        2,115,114
(9)           10,328            0      10,337      10,337            0
..........PS_ADM_APPL_SBPLAN          389,481          348,446
(41,035)           42,792            0      83,827      83,827
0
..........PS_ADM_APPL_TENDER            4,818            4,818
0                0            0           0           0            0
..........PS_ADM_APP_CAR_SEQ          448,046          448,046
0             3,747            0       3,747       3,747            0
..........PS_UC_GRAD_CHOICES          447,773          447,780
7               202            0         209           7          202
-------------------------------------------------------------------------
-------------------------------------------------------------------------
--
UCCNV320
..........PS_ACAD_PLAN              2,949,383        1,629,044
(1,320,339)          821,827            0   2,142,166   2,142,166
0
..........PS_ACAD_PROG              2,315,382        1,629,044
(686,338)        1,037,410            0   1,723,748   1,723,748
0
```

COMMUNICATION AND USER ENGAGEMENT

Huge engagement and outreach program to communicate with all impacted users.

USER ENGAGEMENT

During the project we worked with key university offices who provided guidance during data modelling and actively engaged with data clean-up and testing

- Student Registry
- Cambridge Admissions Office
- Graduate Admissions Office
- Student Finance
- Colleges
- Departments
- Interface and 3rd Party users who export data from the system

COMMUNICATION

UTF

GrAdmin

Degree Cttee Forum

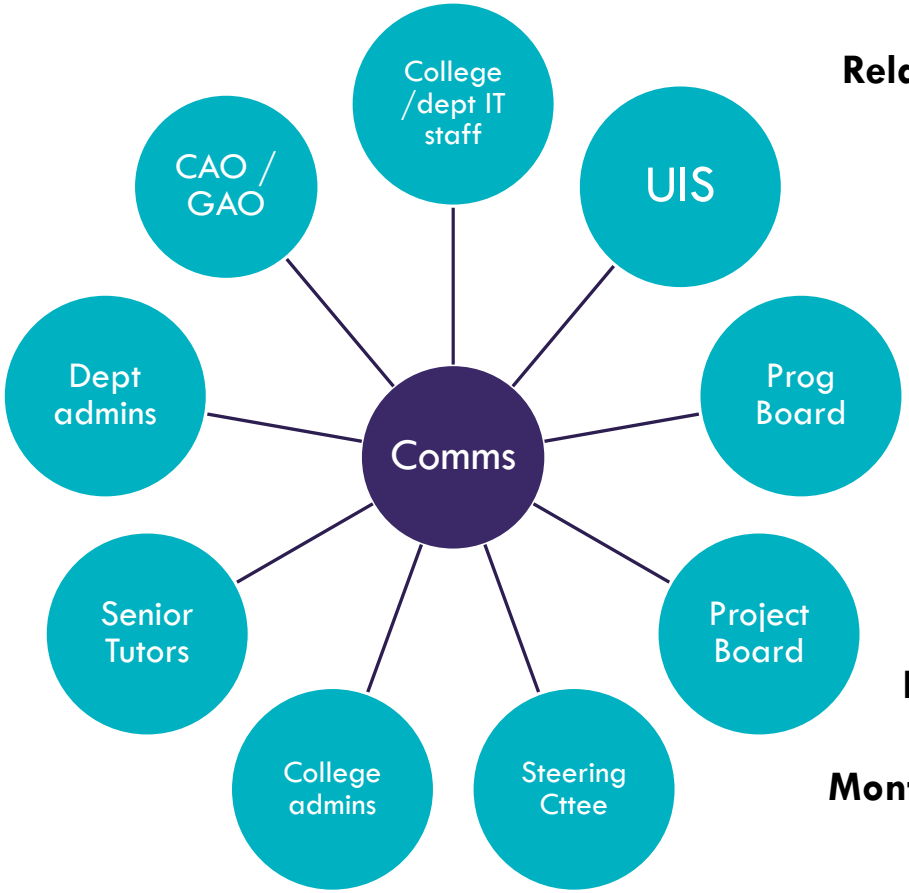
CITMG

Colleges IT Cttee

UIS staff seminars

Programme website

GAO / CAO websites



Relationship Manager mtgs

Fees & Funding Forum

School Admin Fora

Audit Committee

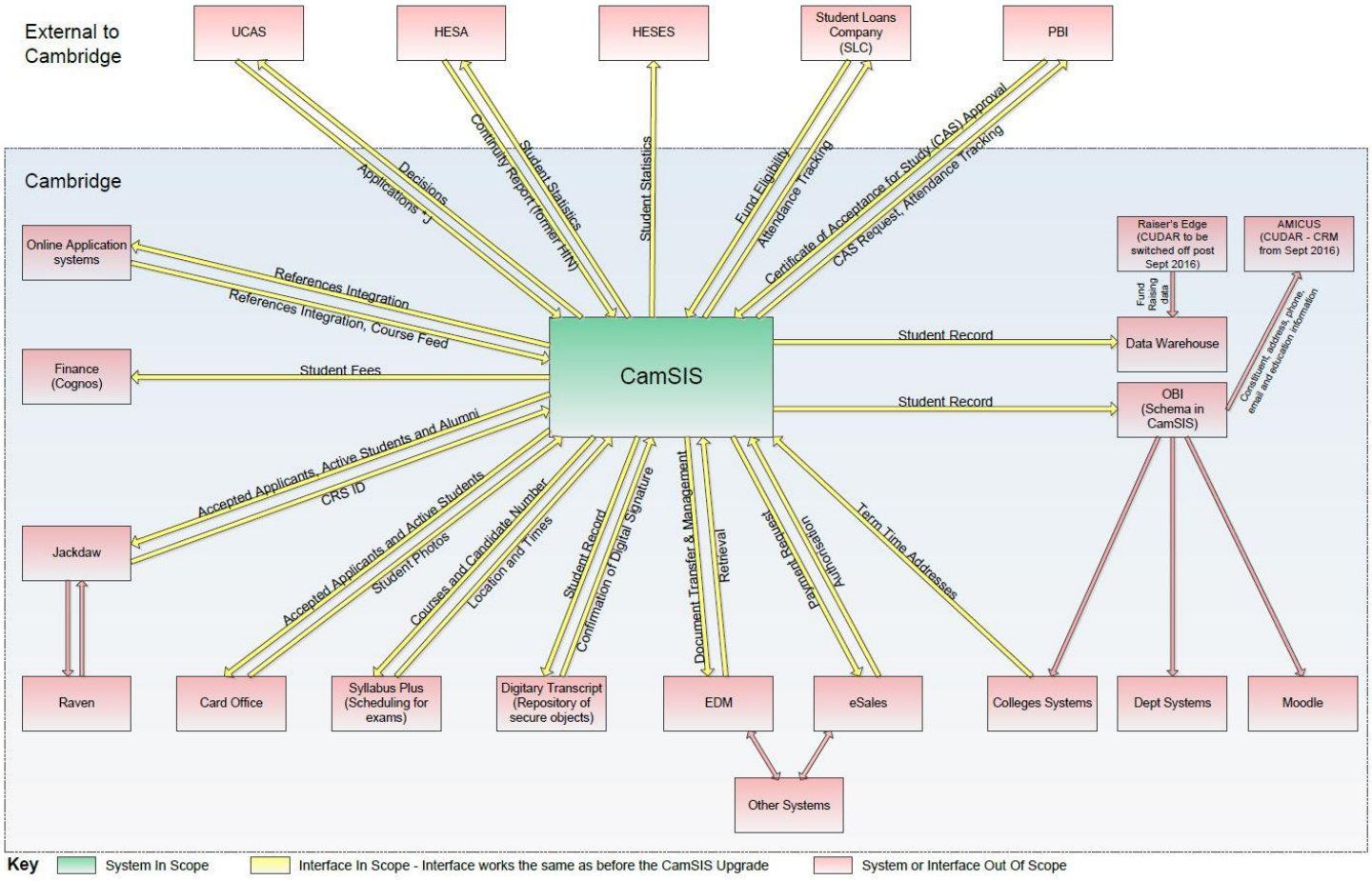
UIS newsletters

Support website

Familiarisation sessions

Monthly mtgs with Jackdaw

INTERFACES


External to Cambridge
UCAS
HESA
HESES
Student Loans Company (SLC)
PBI
Cambridge
Decisions
Applications *J
Continuity Report (former HIN)
Student Statistics
Student Statistics
Fund Eligibility
Attendance Tracking
Certificate of Acceptance for Study (CAS) Approval
CAS Request, Attendance Tracking
Online Application systems
References Integration
References Integration, Course Feed
Finance (Cognos)
Student Fees
CamSIS
Student Record
Student Record
Raiser's Edge (CUDAR to be switched off post Sept 2016)
AMICUS (CUDAR - CRM from Sept 2016)
Fund Raising data
Data Warehouse
OBI (Schema in CamSIS)
Constituent, address, phone, email and education information
Accepted Applicants, Active Students and Alumni
CRS ID
Jackdaw
Accepted Applicants and Active Students
Student Photos
Courses and Candidate Number
Location and Times
Student Record
Confirmation of Digital Signature
Document Transfer & Management
Retrieval
Payment Request
Authorisation
Term Time Addresses
Raven
Card Office
Syllabus Plus (Scheduling for exams)
Digitary Transcript (Repository of secure objects)
EDM
eSales
Colleges Systems
Dept Systems
Moodle
Other Systems
Key
System In Scope
Interface In Scope - Interface works the same as before the CamSIS Upgrade
System or Interface Out Of Scope

PROJECT TEAM ON TOUR

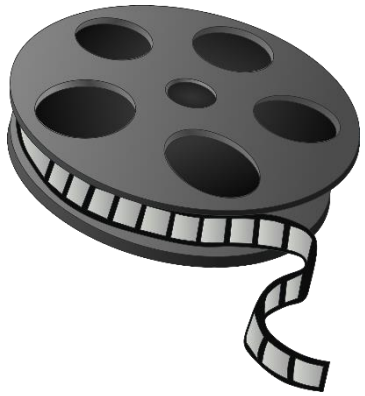
Video, online training course with a quiz, familiarisation sessions

Familiarisation training sessions

A series of familiarisation training sessions are being scheduled between May and September 2017. Details to be added soon for sessions about how the project affects those who manage student records, exams and fees.

At the familiarisation sessions, the project team will explain how the simplified Academic Structure will impact users' working processes.

17 MAY	Familiarisation training: Academic Structure for PG Admissions
18 MAY	Familiarisation training: Academic Structure for UG Admissions
08 JUN	Familiarisation training: Academic Structure and interfaces
15 JUN	Familiarisation training: Academic Structure for PG Admissions
15 JUN	Familiarisation training: Academic Structure for UG Admissions
11 JUL	Familiarisation training: Academic Structure and interfaces
20 JUL	Familiarisation training: Academic Structure for UG Admissions



PROJECT MANAGEMENT

Build professional and skilled team of individuals and supply them with tools to succeed.

PEOPLE

62 people were involved in the project throughout the 12 months period

The core team included:

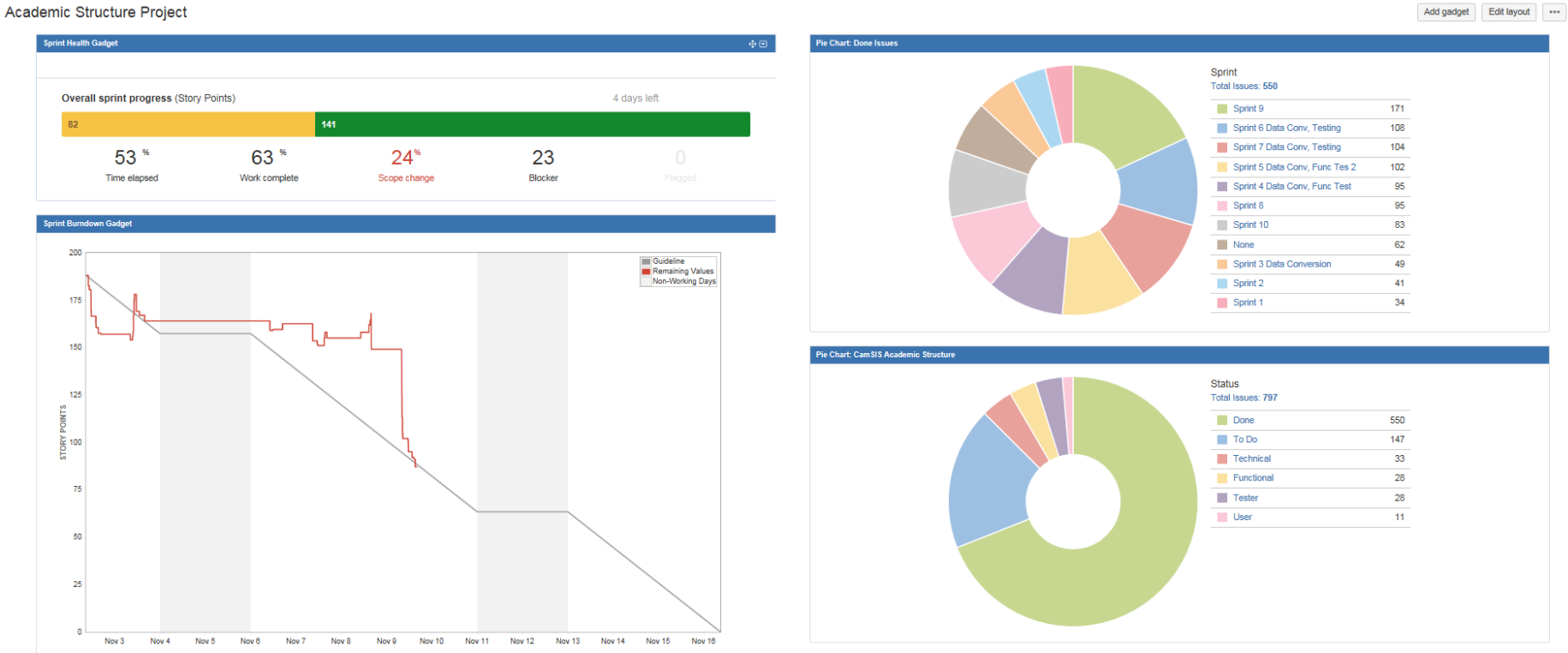
- 4 functional analysts
- 5 developers
- 5 testers
- 1 user from Student Registry
- 1 communication manager
- 1 trainer
- 1 project manager

TOOLS

We documented analysis, testing, decisions in confluence

We used JIRA to track the work progress including the bugs and data cleanup

SAMPLE JIRA REPORTS

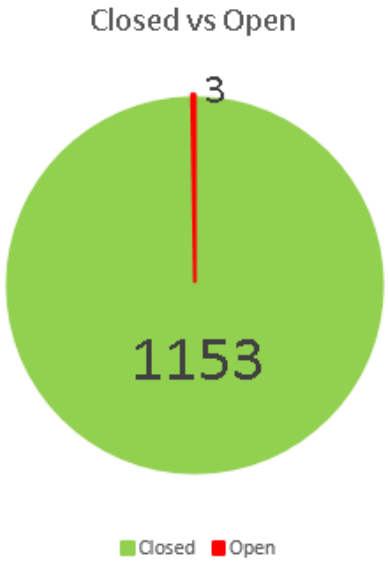


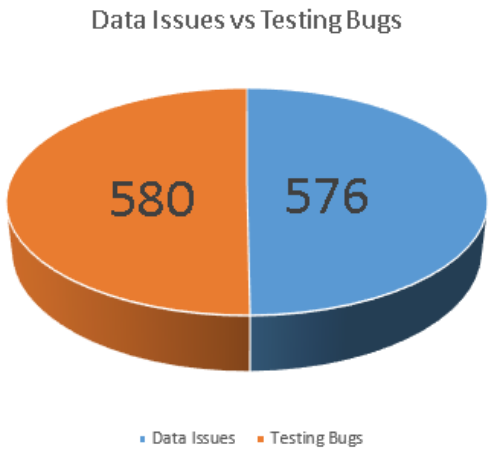
PROGRESS

We tracked progress in JIRA

Data issues ranged between few individual records to few thousand records. Individual records were corrected manually. Larger data sets were investigated by functional analysts to find patterns. These were then resolved with data scripts by technical team.

Testing bugs were mainly related to the removal of customisations for the old academic structure.

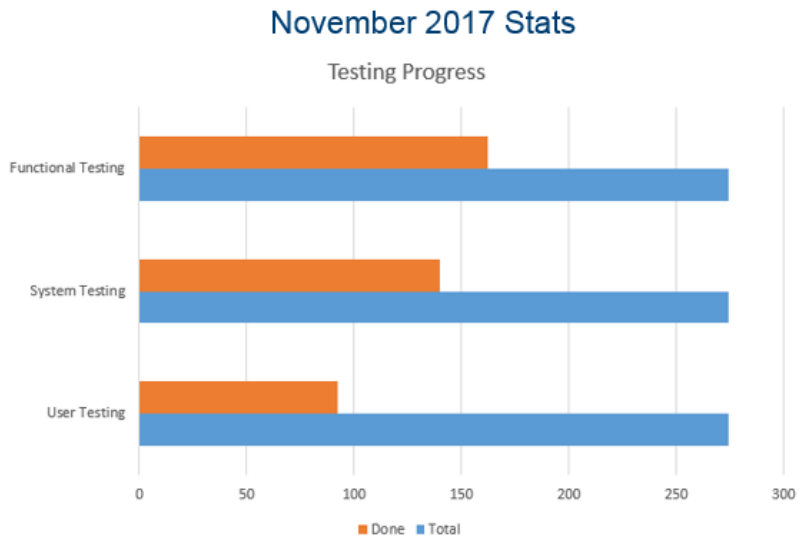


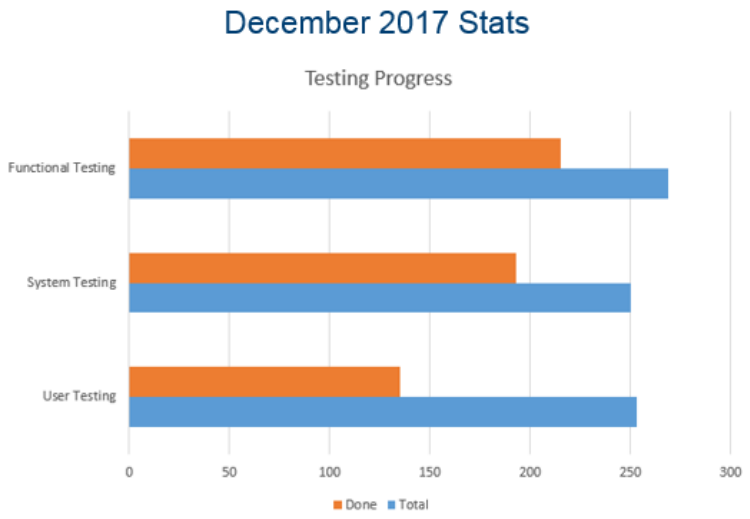


TESTING

Everyone was involved in testing: testing team, functional team and dedicated users. Test scripts were recorded on JIRA which enabled effective progress tracking.

Sample progress stats:



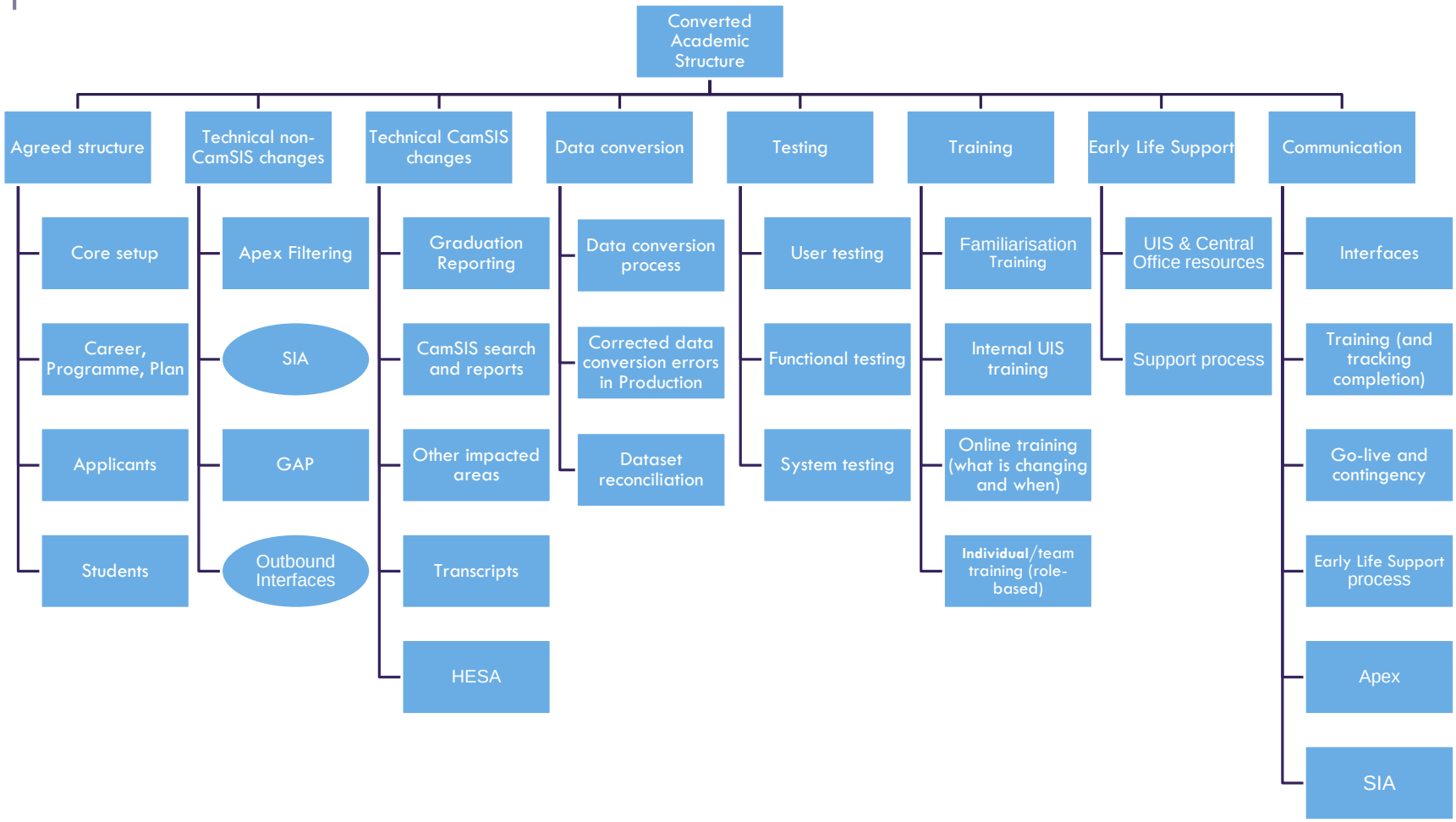


TRAINING FOR ADMINISTRATORS

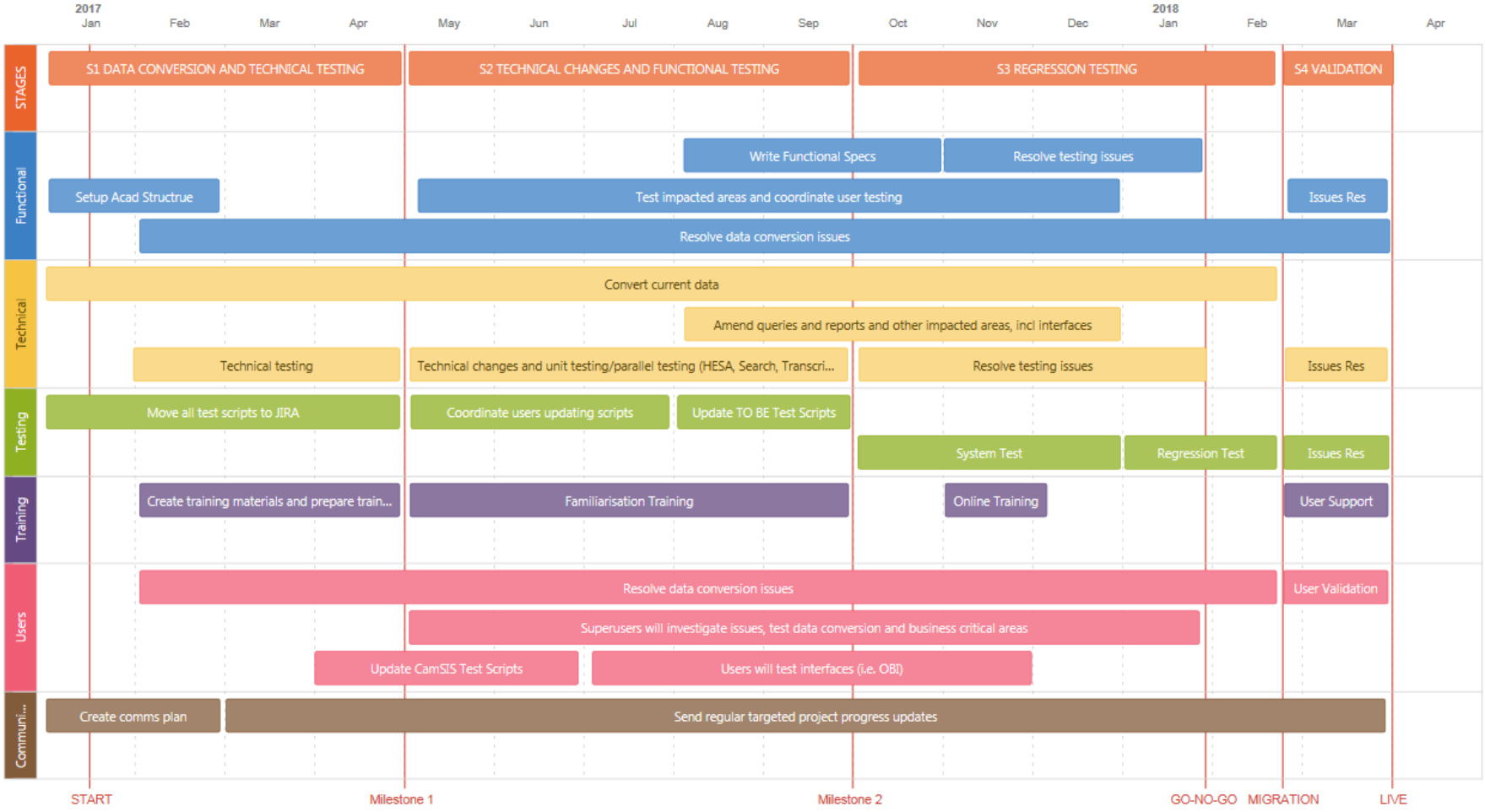
We tracked the success of training for administrators by:

- tracking attendance of the familiarisation sessions
- using monitoring tools to see how effective our communication was (how many people clicked the link to training)
- 500 people completed the training
- Those that did not complete the training we phoned individually (170 people) to ask if they were well informed and felt ready for the transition.

DELIVERABLES



PLAN

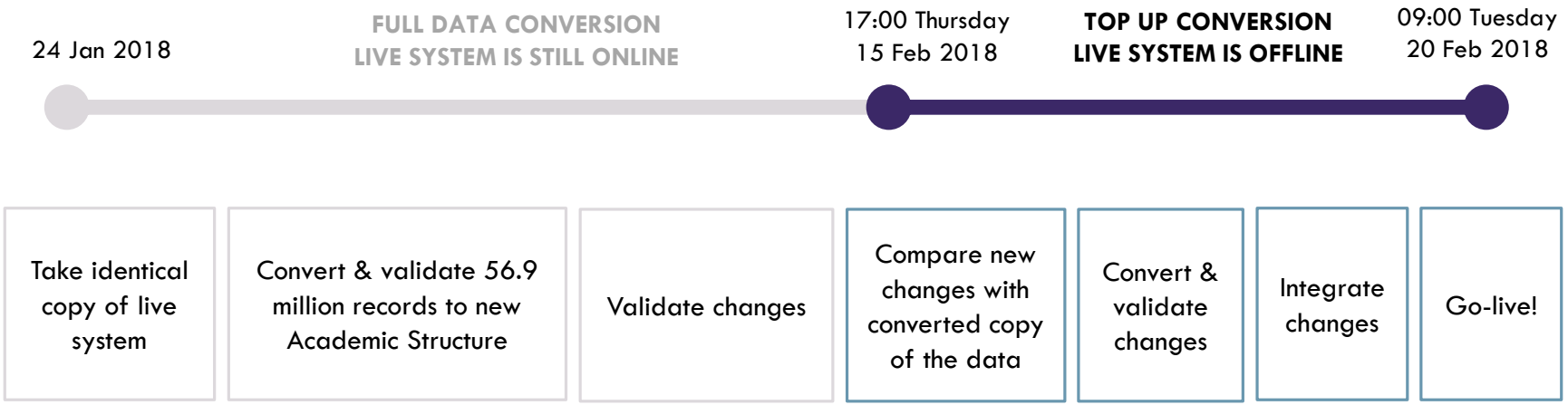

2017
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
2018
Jan
Feb
Mar
Apr
STAGES
S1 DATA CONVERSION AND TECHNICAL TESTING
S2 TECHNICAL CHANGES AND FUNCTIONAL TESTING
S3 REGRESSION TESTING
S4 VALIDATION
Functional
Write Functional Specs
Resolve testing issues
Setup Acad Structrue
Test impacted areas and coordinate user testing
Issues Res
Resolve data conversion issues
Technical
Convert current data
Amend queries and reports and other impacted areas, incl interfaces
Technical testing
Technical changes and unit testing/parallel testing (HESA, Search, Transcri...
Resolve testing issues
Issues Res
Testing
Move all test scripts to JIRA
Coordinate users updating scripts
Update TO BE Test Scripts
System Test
Regression Test
Issues Res
Training
Create training materials and prepare train...
Familiarisation Training
Online Training
User Support
Users
Resolve data conversion issues
User Validation
Superusers will investigate issues, test data conversion and business critical areas
Update CamSIS Test Scripts
Users will test interfaces (i.e. OBI)
Communi...
Create comms plan
Send regular targeted project progress updates
START
Milestone 1
Milestone 2
GO-NO-GO
MIGRATION
LIVE

RISKS

Delivery Risks	Area	Impacts	Mitigation
There is a risk that the full data conversion starting from 24th January may take longer than expected. This is because not all data has yet been converted.	Data conversion and reconciliation	If delayed would impact project go live	• 6 days of contingency over three weekends have been put in place just in case • We have also moved the start date to 24th Jan instead of 29th Jan to give us another three working days • We are monitoring how long each full data conversion run is taking so that we have a really good idea if we are likely to overrun and can plan accordingly. • We are rehearsing both full data conversion and identifying the types of issues we may expect • We are also getting additional hardware to improve performance and speed the processing time
There is a risk that top-up data conversion is takes longer than expected due to the number of changes users have made on the system during three weeks prior to down time period	Data conversion and reconciliation	If delayed would impact project go live	• We are testing how long the top-up data conversion is taking so that we can estimate if the given time scales are realistic. • We will be restricting access to the key setup pages on the system from the 24th January until go live to minimise the risk of errors due to missing setup • Go live date of February was chosen as it was deemed the best worst time given the activities happening in the live system • We are planning to run an additional top up just prior to the 15th February
There are logistical risks around the power and network availability during the critical go live activities	Logistics	If not available for extended lengths of time in critical period project go live would be impacted	• We have secured the provision of back up network and power if either go down during the critical go live activities • We have communicated and will remind closer to the time for these critical services not to plan any outages during the go live period

Post Go Live Support Risks	Area	Impacts	Mitigation
We are expecting higher than usual volume of helpdesk calls however there is a risk that the volume will be even larger than expected.	Support	Users may experience slower than usual response to their issues	• We are planning to have four weeks of early life support • We will be monitoring call numbers on a daily basis during the early days after go live • To provide faster and more targeted support Student Registry, CAO and GAO will be working with us and provide support to Colleges and Departments as the first point of call • We are communicating and training users about the changes and where to find help • We are communicating with users to expect slower than usual response time to helpdesk calls
There is a risk that resources will be diverted to other Programme or non critical Live Ops work during the early life support period	Support	Users may experience slower than usual response to their issues	• We are reserving the functional, technical and testing resources to support the project go live for up to four weeks after 20th February. If we find the number of calls is not as high the resources will be released for other work sooner.
There is a risk that users find a show stopper issue immediately after opening of the system	Support	If this happens system will go down again on Tuesday. If restored from backup within the first hour of opening users will loose at most one hour worth of work	• If within first hour of opening we find a show stopper issue we will take system down again and restore from backup. This means users will loose max one hour worth of work but this will give us time to reassess, investigate the issue and plan what to do next. • If we find any critical issues after the first hour of opening we will not take system down again. We will firefight the issues, otherwise users will loose too much data.

GO-LIVE


24 Jan 2018
FULL DATA CONVERSION
LIVE SYSTEM IS STILL ONLINE
17:00 Thursday
15 Feb 2018
TOP UP CONVERSION
LIVE SYSTEM IS OFFLINE
09:00 Tuesday
20 Feb 2018
Take identical copy of live system
Convert & validate 56.9 million records to new Academic Structure
Validate changes
Compare new changes with converted copy of the data
Convert & validate changes
Integrate changes
Go-live!

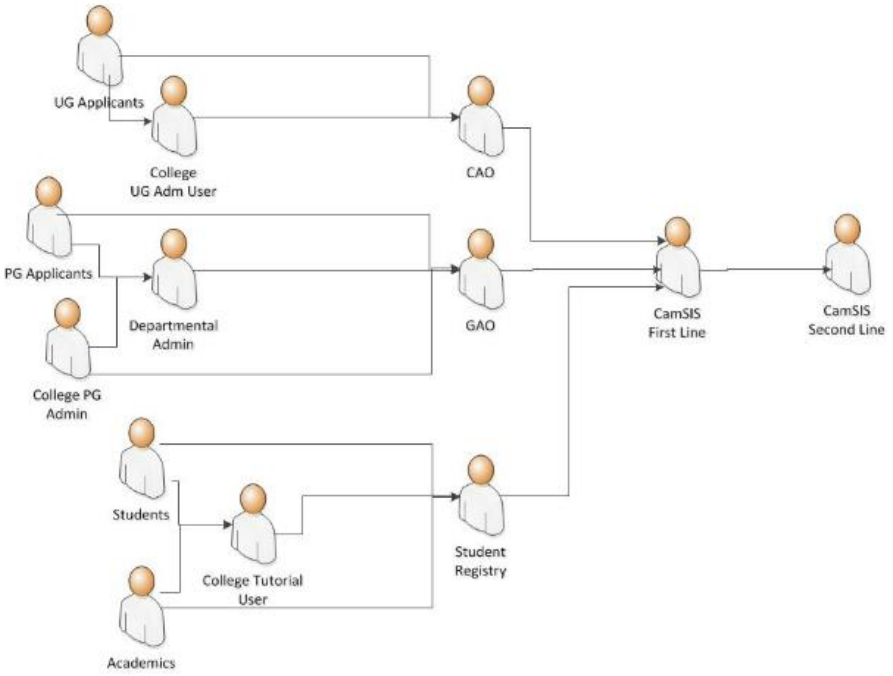
CONTINGENCY PLAN

Freeze setup table changes	System unavailable Read-only environment available	Contingency period (restore from backup and continue conversion)

Preparation	Thurs 15 Feb 17:00	Fri 16 Feb	Sat 17 Feb	Sun 18 Feb	Mon 19 Feb	Tues 20 Feb 09:00	Wed 21 Feb	Thurs 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb

SUPPORT PLAN

- We planned for one month of extended support after go live but we released most staff after two weeks
- After go live additional resources were put on first line support including one additional super user
- A full core project team was on standby as a second line support
- We had additional staff acting as a first point of contact at offices that deal directly with students and academic staff
- We produced daily statiscs on issues logged vs. closed, to monitor the support level required

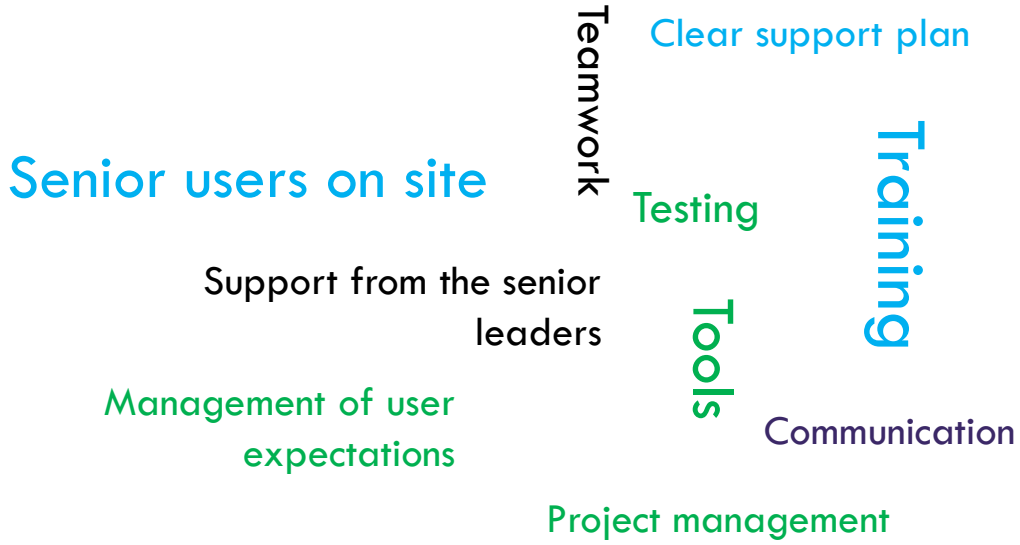


CONCLUDING THOUGHTS

Due to great team effort, effective project management, vast communication effort and team dedication we built a solid platform for the future.

THE PROJECT WAS A BIG SUCCESS

WHAT WENT WELL?



LESSONS LEARNT

Engaging users throughout the project is critical

The data will be in a worse shape than you think

Data modelling will give you great insights if your new academic structure fits university requirements

Do not underestimate the time it will take to convert vast amounts of data

The biggest risk will be things out of your control e.g. 3rd Party suppliers

QUESTIONS

PRESENTER

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Functional Team Lead

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ALL ALLIANCE PRESENTATIONS WILL BE AVAILABLE FOR DOWNLOAD FROM THE CONFERENCE SITE

THANK YOU!

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