



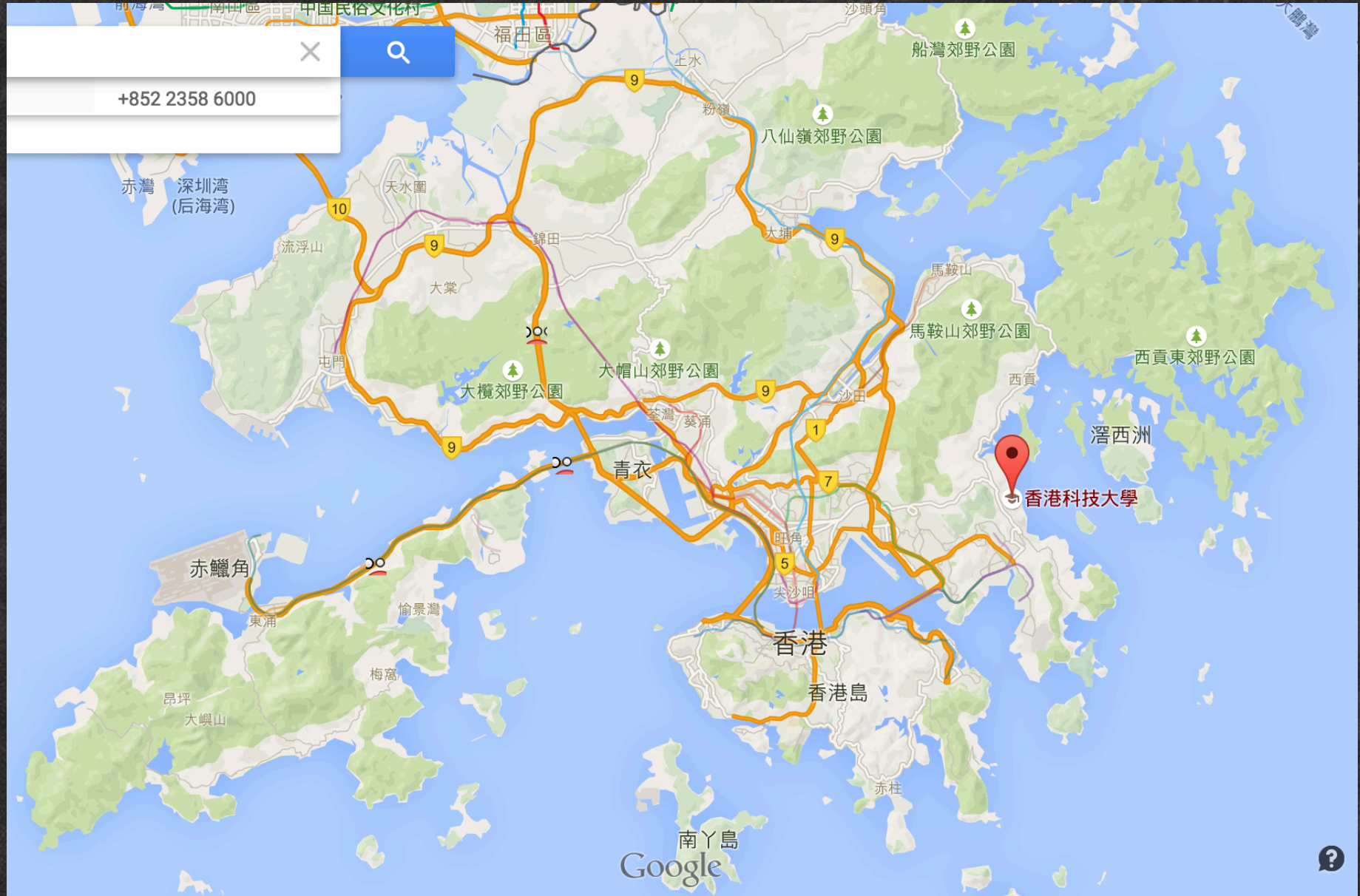
# Learning Management System (LMS) Evolution

## Change management perspective

William Wan (william.wan@ust.hk)  
Head of Teaching Technologies  
Information Technology Services Center, HKUST



# Background of HKUST





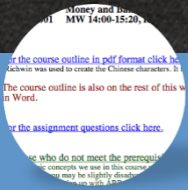
# Background of HKUST

- Started in 1991
- 9000 Undergraduates
- 4500 Postgraduates
- 600 Teaching staff





# Evolution of LMS in HKUST



**1997**

**Basic website**  
for content  
distribution

**Content delivery**

- Require technical skills to set things up
- Need to remember many URLs



**2001**

**WebCT**  
Ease of content  
update by non-  
technical persons

**Basic Interaction**

- Bb acquired WebCT >> unknown future
- No control over enhancements / fixes
- License cost



**2006**

**Sakai**  
Open-source  
Allow customization

**Customization**

- Inconsistent UI
- Not user-friendly
- Application architecture changes between versions
- High maintenance cost
- Not suitable for blended learning



**2014**

**Canvas**  
User-friendly  
Min maintenance  
API for integration

**Cloud Service**

- No customization on core functions
- Network latency
- Privacy / security concerns
- Remote support



# Why change?

- Academic reform in HK in 2012
  - New curriculum
  - 3 years tertiary education  4 years
  - Outcome-based learning
- Blended learning initiative
- More team-based and online activities
- High maintenance cost to maintain the open-source Sakai platform



# Change Process – solutions selection

Oct-13

Formation of  
Committee

Oct-13

Requirements

Nov-13

Vendor listing

Jan-14

Vendor demo

Feb to Apr-14

Tender Process

May to Jul-14

PO & Agreement

Representatives:  
CELT\*  
Provost office  
ITSC  
LIB  
PTC  
Faculty Member  
Student Union

Functional  
requirements  
  
Technical  
Requirements  
  
Evaluation  
criteria

Blackboard  
  
Canvas  
  
Desire2Learn  
  
Moodle  
  
Moodlerooms

Blackboard  
  
Canvas (remote)  
  
Moodle  
  
Moodlerooms  
  
Desire2Learn

Tender reply  
Trial system setup  
Tender review  
(Technical)  
Tender review  
(Price)  
Recommendations  
Tender board  
approval

Legal review and  
discussion  
Agreement  
revisions  
Signing of PO &  
Agreement

Stakeholders  
engagement

Confirm  
project  
objectives

Look for  
solutions

Evaluate  
solutions

Management  
approval

Start of  
Implementation

Engaging faculty members & students in the process is important as they are the real-users



# Our change objectives

- Usability
- Scalability & High Performance
- Mobile friendly
- Security
- Expandability
- Maintainability



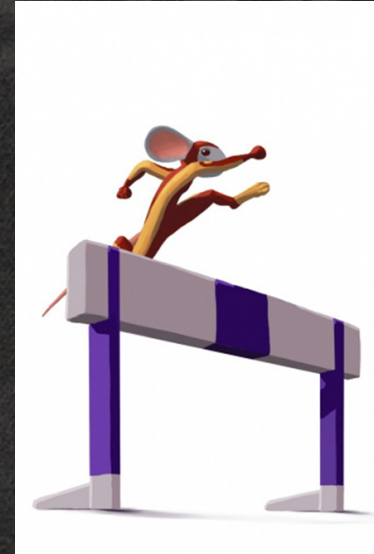
canvas



# Initial hurdles of the change

- Top concern – Cloud service

- Data Privacy
- Security
- Ownership of data
- Law compliance
- Performance / Latency
- Support



- To overcome

- Persuade stakeholders – Cloud services is the trend
- Review and revise service agreement to meet our needs
- Use the new data center in Singapore instead of USA



# Change Process - Implementation

Jul-14

On-site  
Implementation  
Workshops (5 days)

1

- Project planning
- Branding & UI
- JS customization
- Basic Setup
- Authentication
- Roles/Permission
- Migration
- Integration
- Marketing
- Support model

Jul-14

On-site  
Trainings (3 days)

2

- Admin Training
- Instructor Training (train the trainer)
- Course Design & Delivery
- Assessment / grading / collaboration
- Communication, analytics
- Training Strategy

Aug-14

System  
Implementation

3

- Regular web meeting w/ implementation Consultant
- SIS import
- Customized URL
- User Agreement
- LTI whitelisting

Sep-14

Production  
Launch

4

- Few courses in pilot
- System walk through with pilot instructors



THE HONG KONG  
UNIVERSITY OF SCIENCE  
AND TECHNOLOGY

canvas



# Implementation / Change strategy

- Minimize customizations from the core system
- Phased approach
  - 1<sup>st</sup> phase Sept 2014 with minimal integration
  - 2<sup>nd</sup> phase Feb 2015 with more integration with existing systems
- Objectives
  - To launch the system as soon as possible
  - Minimize customization / upgrade effort
  - Ease of on-going maintenance and support
  - Standard tutorial / training materials from Canvas can be used



# Implementation - customizations

- Minor user interface customizations
  - Hide delete course button
  - Hide reset course content button
  - Hide conclude course button
  - Hide add token button
  - Hide link to Instructure support site
  - Add user agreement for 1<sup>st</sup> time access
- Objectives
  - Minimize impact to users when they are not familiar with the system initially
  - To direct all support requests to local team for better support
  - Force user to review the TOS before using the system





# User interface customization

The screenshot displays the Canvas LMS interface for a course named DEMO1111. The top navigation bar includes the university logo, the Canvas brand name, and links for Courses, Grades, and Calendar. A user menu in the top right corner shows the name William Wan and links for Inbox, Settings, Logout, and Help. The left sidebar contains a navigation menu with links to Home, Announcements, Assignments, Discussions, Grades, People, Pages, Files, Syllabus, Outcomes, Quizzes, Modules, Conferences, Collaborations, LMES Migration, and Settings. The main content area is titled 'External Apps' and includes a 'View App Configurations' button. A text box explains that apps can be added to individual courses or all courses in an account. Below this, there are filter tabs for 'All', 'Not Installed', and 'Installed', and a 'Filter by name' search box. At the bottom of the main content area, there are logos for 'code embed' and 'Dropbox'. On the right side, a sidebar contains a list of course actions: Student View, Course Statistics, Course Calendar, Conclude this Course, Permanently Delete this Course, Copy this Course, Import Content into this Course, Export Course Content, and Reset Course Content. Below these actions is a 'Current Users' table.

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Courses Grades Calendar

William Wan Inbox Settings Logout Help

DEMO1111  
2014-15 SPRING

Home  
Announcements  
Assignments  
Discussions  
Grades  
People  
Pages  
Files  
Syllabus  
Outcomes  
Quizzes  
Modules  
Conferences  
Collaborations  
LMES Migration  
Settings

Home > DEMO1111 > Settings

Course Details Sections Navigation Apps Grade Publishing Feature Options

External Apps

View App Configurations

Apps are an easy way to add new features to Canvas. They can be added to individual courses, or to all courses in an account. Once configured, you can link to them through course modules and create assignments for assessment tools.

See some LTI tools that work great with Canvas. You can also check out the Canvas Community topics about LTI tools.

All Not Installed Installed

Filter by name

code embed

Dropbox

Student View  
Course Statistics  
Course Calendar  
Conclude this Course  
Permanently Delete this Course  
Copy this Course  
Import Content into this Course  
Export Course Content  
Reset Course Content

Current Users

Students:	None
Teachers:	1
CELT Designer:	None
TAs:	None



# User interface customization

## Approved Integrations:

These are the third-party applications you have authorized to access the Canvas site on your behalf:

App	Purpose	Dates
User-Generated	William Test	Expires: Jan 31 at 12am Last Used: --
Canvas for Android	LG-F350L	Expires: never Last Used: Mar 5 at 10:53am

 New Access Token



## Terms of Service Agreement

Last updated: Jul 18, 2014

### 1. Acceptance

By using the HKUST Learning Management System ("LMS", "Service") provided by Instructure, Inc. ("Service Provider") and managed by HKUST LMS Administrator ("Administrator", "We", "Us"), you ("User", "Users") are agreeing to be bound by the following terms and conditions ("Terms of Service").

### 2. User restriction

Users are not allowed to:

- use the Service, for non-educational purposes, to store or transmit infringing, unsolicited marketing emails, libelous, obscene, deceptive, defamatory, pornographic, racist, sexual, hateful, or otherwise objectionable, unlawful or tortious material, or any other material in violation of a third-party right;
- use the Service to harm or impersonate any person, or for any commercial purpose;
- interfere with or disrupt the integrity or performance of the Service;
- attempt to gain unauthorized access to the Service or their related systems or networks;
- reproduce, duplicate, copy, sell or exploit any portion of the Service or
- reverse engineer the Service;

### 3. Privacy

We pledge to meet fully internationally recognised standards of personal data privacy protection, in complying with the requirements of the Personal Data (Privacy) Ordinance (PDPO). In doing so, we will ensure compliance by our staff with the strictest standards of security and confidentiality.

## Help



### Ask Your Instructor a Question

*Questions are submitted to your instructor*

### Search the Canvas Guides



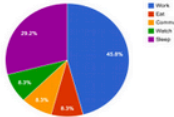
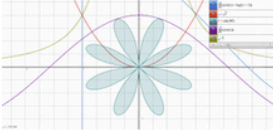












*Find answers to common questions*

### Report problems to [canvas@ust.hk](mailto:canvas@ust.hk)

*or call CELT's support hotline at 2358-8036*



# Implementation – LTI whitelisting

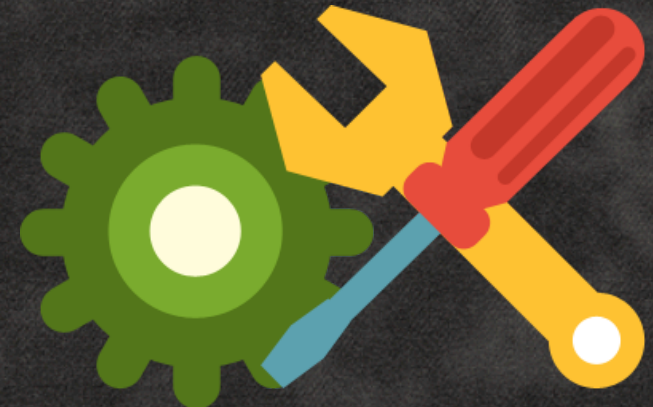
		Flickr Search
		
		
		
		
		

## Objectives

Narrow-down those useful LTI tools  
For instructor to use.

Hide those require subscription or  
system integrations

Minimize support effort





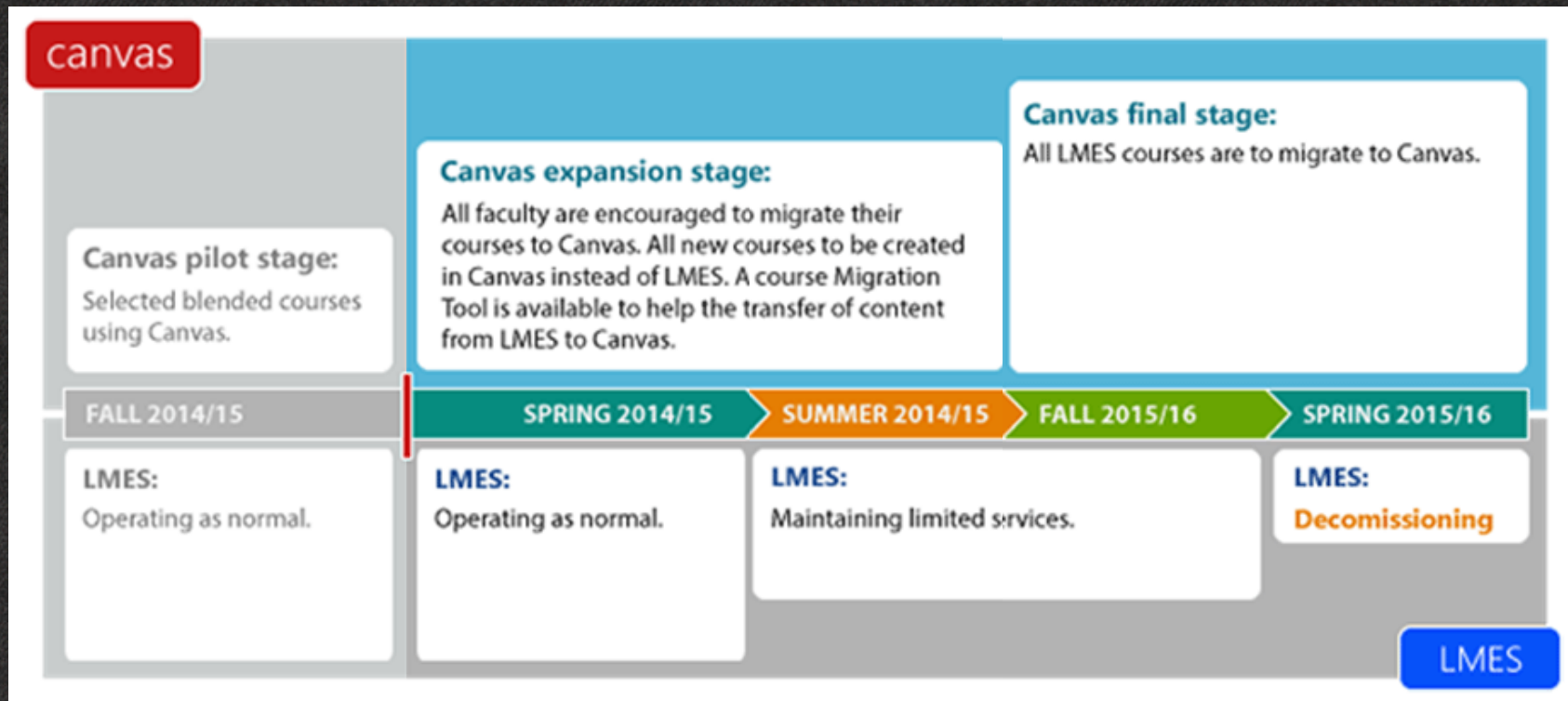
# Implementation - snapshots





# Change Management – User adoption

- Migration plan from Sakai to Canvas
- Email sent to all teaching staff about the plan
- Communicated with student union about the new system





# Adoption / migration strategy

- Objectives
  - Minimize lead-time
  - Minimize support work
  - Instructor / TA self-service migration
- A very simple LTI tools was developed for migration use
- Organize trainings for instructors and TAs





## DEMO1111

2014-15 SPRING

Home

Announcements

Assignments

Discussions

Grades

People

Pages

Files

Syllabus

Outcomes

Quizzes

Modules

Conferences

Collaborations

LMES Migration

Settings

🏠 &gt; DEMO1111

## LMES Migration

This tool helps you transfer components from your LMES course site into the current Canvas site. Once you have migrated the content, you can easily modify it and integrate the components into your Canvas learning sequence.

### STEP 1 Which course do you want to transfer content from?

### STEP 2 Which components would you like to transfer?

To find out more about the settings of the individual components after the transfer or where to find them on Canvas, click on the info icon ⓘ after each of the components.

- ☐ Course Content ⓘ
- ☐ Announcement ⓘ
- ☐ Assignment ⓘ
- ☐ Self-Test ⓘ

### STEP 3 Start the transfer

The duration of the transfer depends on the amount of components you are migrating. In most cases the process will not take more than an hour, but in some rare cases, it may take up to a day. You will receive an email on your ITSC account as soon as the process has been completed.

[Transfer](#)

There are 76 courses used this tools to migrate the course materials from Sakai to Canvas



# User adoption (Training)

From Aug 2014 – Jun 2015

## Canvas Basic

- 11 sessions held
- Basic functionalities of Canvas
- Course & content design
- Manage student progress
- Over 200 participants

## Canvas Extended

- 11 sessions held
- Student Groups
- Conferences
- Turnitin and other assessments
- Over 200 participants

## Canvas for CLE

- 3 sessions held
- Specific sessions for language course instructors / TAs
- ~100 participants

## Canvas Exclusive

- Multiple sessions held
- Training specific to individual / groups of instructors / TAs



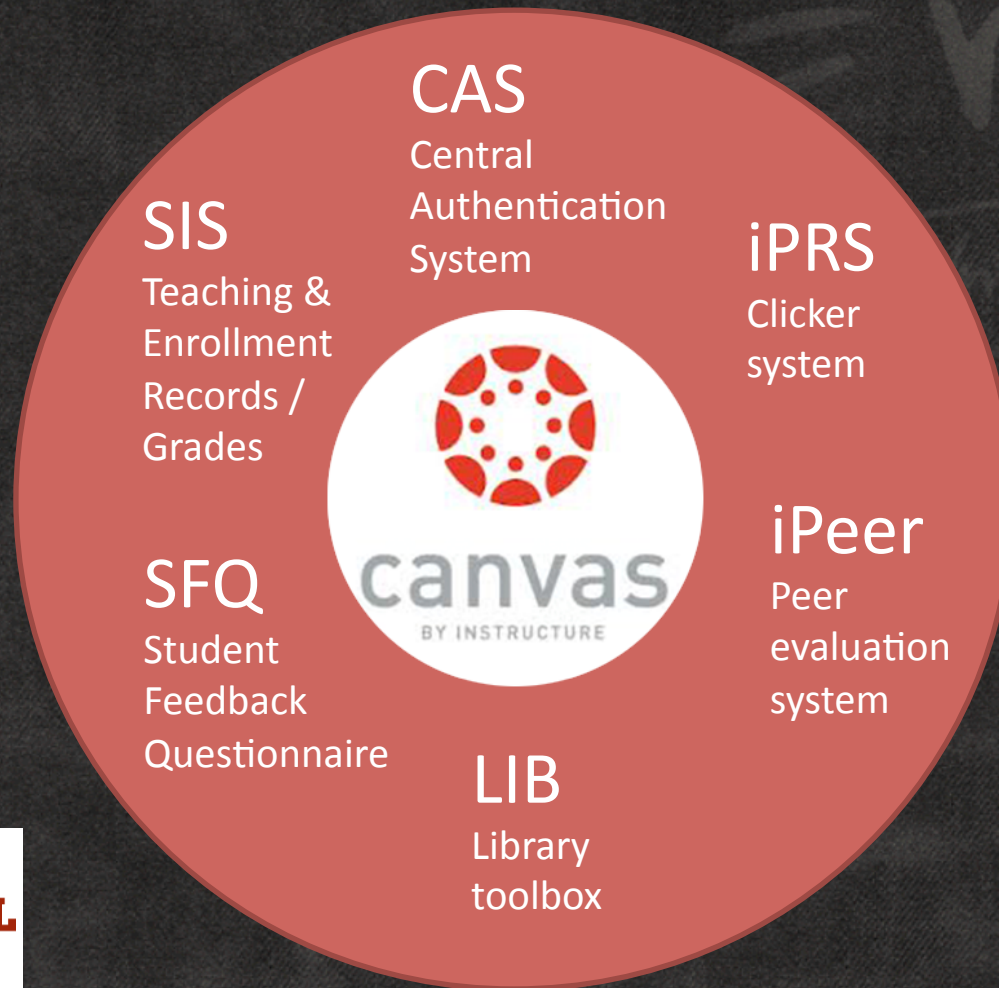
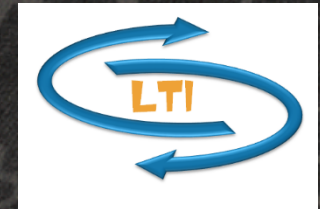
# Integration with other systems



- Integration strategy
  - User-friendly
  - Seamless integration between systems
  - Auxiliary systems can be updated / upgraded independently
- Objectives
  - To retain the existing LMS integration to minimize changes for end-users
  - To enhance the existing integration to make users more willing to change

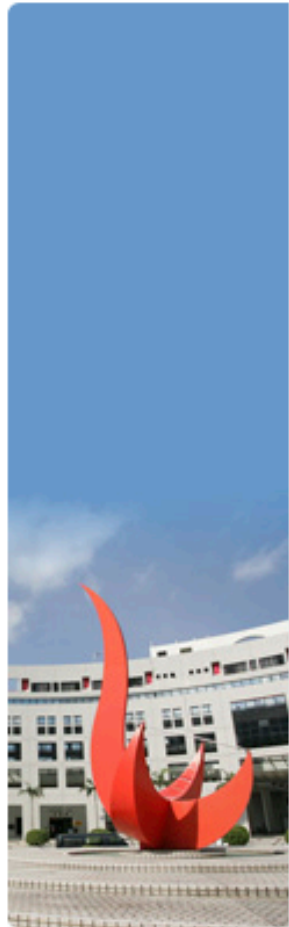


# Integration with other systems





# Integration (CAS)



Center for Enhanced Learning & Teaching  
教學促進中心

## CELT System Authentication Service

To access the protected service, please enter your ITSC network account username and password.

Username

Password

LOGIN

**Remember to Logout** - It is important to log out and close all your web browser windows when you finish using services that require authentication.


### Password Management:

For **ITSC account users**, click [here](#) if you want to change your password. Contact [cchelp@ust.hk](mailto:cchelp@ust.hk) or call 2358-6200 if you want to retrieve your password.

For **non-UST users**, please authenticate yourself with the credentials provided by CELT. Click [here](#) if you want to change/retrieve your password.



# Integration (SIS student import)



canvas

Courses ▾GradesCalendar

William WanInboxSettingsLogoutHelp

The Hong Kong University of Science and Technology

CoursesUsersStatisticsPermissionsOutcomesRubricsGradingQuestion BanksSub-AccountsTermsAuthenticationSIS ImportAttendanceAdmin ToolsSettings

🏠 > The Hong Kong University of Science and Technology > SIS Import

## SIS Import

Select the zip file that you want imported.  
For a description of how to generate these zip files, [please see this documentation](#).

Choose FileNo file chosen

Import type: 

Instructure formatted CSV or : ▾

☐ This is a full batch update

If selected, this will delete everything for this term, which includes all courses and enrollments that are not in the selected import file above.  
See the documentation for details.

☐ Override UI changes

By default, UI changes have priority over SIS import changes; for a number of fields, the SIS import will not change that field's data if an admin has changed that field through the UI. If you select this option, this SIS import will override UI changes.  
See the documentation for details.

Process Data

## Last Batch

Started: Mar 5 at 4:17pm  
All SIS data was successfully imported.

- Imported Items
  - Accounts: 0
  - Terms: 0
  - Courses: 0
  - Sections: 0
  - Users: 0
  - Enrollments: 0
  - Crosslists: 0
  - Groups: 0
  - Group Enrollments: 0



# Integration (SIS grade publish)

The screenshot displays the Canvas LMS interface for a course named DEMO1111. The top navigation bar includes the Canvas logo, course navigation links (Courses, Grades, Calendar), and user options (William Wan, Inbox, Settings, Logout, Help). The left sidebar lists course navigation links, with 'Settings' highlighted. The main content area shows the 'Grade Publishing' settings page, with a red arrow pointing to the 'Publish grades to SIS' button. The right sidebar contains course management options and a 'Current Users' table.

**THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY** canvas

William Wan | Inbox | Settings | Logout | Help

Courses ▾ | Grades | Calendar

DEMO1111  
2014-15 SPRING

Home | Announcements | Assignments | Discussions | Grades | People | Pages | Files | Syllabus | Outcomes | Quizzes | Modules | Conferences | Collaborations | LMES Migration | **Settings**

🏠 > DEMO1111 > Settings

Course Details | Sections | Navigation | Apps | **Grade Publishing** | Feature Options

## Grade Publishing

[Publish grades to SIS](#)

**Course Management**

- Student View
- Course Statistics
- Course Calendar
- Conclude this Course
- Permanently Delete this Course
- Copy this Course
- Import Content into this Course
- Export Course Content
- Reset Course Content

**Current Users**

Students:	None
Teachers:	1
CELT Designer:	None
TAs:	None
Designers:	None
Observers:	None

BY INSTRUCTURE | User Research | Help | Privacy policy | Terms of service | Facebook | Twitter



# Integration (SFQ)

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ASSET ctfw student | Inbox | Settings | Logout | Help

Courses ▾ | Grades | Calendar | SFQ

**Welcome to Canvas!**  
You don't have any courses, so this page won't be very exciting for now. Once you've created or signed up for courses, you'll start to see conversations from all of your classes.

**Recent Activity**

**Coming Up** [View Calendar](#)

Nothing for the next week

**SFQ to complete**

- [CELT-1001](#)  
ends on 31 Mar 2015
- [IPRS-1001](#)  
ends on 31 Mar 2015

**Active SFQ Surveys**

- [ACCT-2222-L1](#)


**New SFQ Reports**

- [ACCT-1001-L1-STA](#)  
Mr. Edmond Fung
- [ACCT-1001-L1-STA2](#)  
Mr. Edmond Fung
- [ACCT-1001-L1-STA2 \(provisional\)](#)  
Mr. Edmond Fung

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# Integration (Library Toolbox)



canvas

Courses ▾GradesCalendarSFQ

William WanInboxSettingsLogoutHelp

BLTEST001

HomeAnnouncementsAssignmentsDiscussionsGradesPeoplePagesFilesSyllabusOutcomesQuizzesModulesConferencesCollaborationsLMES MigrationiPRS TestLibrary ToolBoxLTI testSettings

> BLTEST001

### Facts & Figures

- [Credo Reference](#)
- [Encyclopedia Britannica Online](#)
- [Gale Virtual Reference Library](#)
- [Oxford Reference Online](#)

### Databases

- [EBSCOhost](#)
- [LexisNexis Academic](#)
- [ProQuest](#)
- [SciVerse Scopus](#)
- [WiseNews](#)

### Library Services

- [Services for Undergraduates](#)
- [Services for Postgraduates](#)


### Research Guides

- [Information Strategies for Research Assignments](#)
- [Writing Guides and Manuals](#)


### Citation Manager

- [RefWorks](#)

### PowserSearch (Library Catalog)

Word/Phrase 

### PowerSearch (Finding articles)

Word/Phrase 

Ask a Librarian: [web form](#) | [email \(lbref@ust.hk\)](#)

Modified on November 27 2014.



# Integration (iPeer)

## B. Instructor Interface

### 1. Preparing iPeer (Step 1)

The screenshot displays the Canvas LMS interface for The Hong Kong University of Science and Technology. The top navigation bar includes the university logo, the Canvas logo, and links for Courses & Groups, Grades, and Calendar. The user's name, James Lee, and a notification badge for the Inbox are also present. The left sidebar shows the course 'ELEC4610 (L1) 2014-15 SPRING' and a list of navigation links: Home, Announcements, Assignments, Discussions, Grades, People, Pages, Files, Syllabus, Outcomes, Quizzes, Modules, Conferences, iPeer, Collaborations, and LMES Migration. The main content area is titled 'Preparing iPeer (Step 1: Create a new iPeer course)' and contains the following text:

To start using iPeer, please press the "Create a new iPeer Account" button to confirm creating the following course in iPeer, current user will be added as default instructor.

Next step will be adding teaching staff to the course.

**Course Code:** SPRING 2014-15 ELEC4610 L1

**Course Title:** Engineering Optics

**Instructor:** ccjlee

[Create New iPeer course](#)



# Integration (iPRS)

Logout
Help
Anonymous
Screen
Choices
Boxes
Sound
Result

IPRS 1001
Copy of SPRING 2014-2015 IPRS 1001 Session 20150206-1454
+
-
↺
⏸
▶
Preview

Loc: LTH
Spring 14/15
Access Code
12345
Q1
Choices
6
Response
0
Conf. Level
Yes
Answer Type
Single
00:00

Which country is not a member of the European Union?

- (1) Belgium
- (2) Finland
- (3) France
- (4) Norway
- (5) Romania
- (6) Sweden

00141505	11223		

IPRS 1001

Which of the followings are the member states of the European Union?  
(You may choose more than one answer)

☐ 1. Finland

☐ 2. Norway

☐ 3. Romania

Send

You are now at 1 University Avenue, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong  
[Refresh](#)



# Result of the change

- More than 200 course sites created for Spring 2015
- All course sites will be auto-created starting from Summer 2015
- Overall feedback is satisfactory
- Survey will be conducted to collect more feedbacks from users





# Current status (2015 Spring)

The Hong Kong University of Science and Technology

← 2014-15 SPRING →

117  
Courses

136  
Teachers

5,164  
Students

1,285  
Assignments

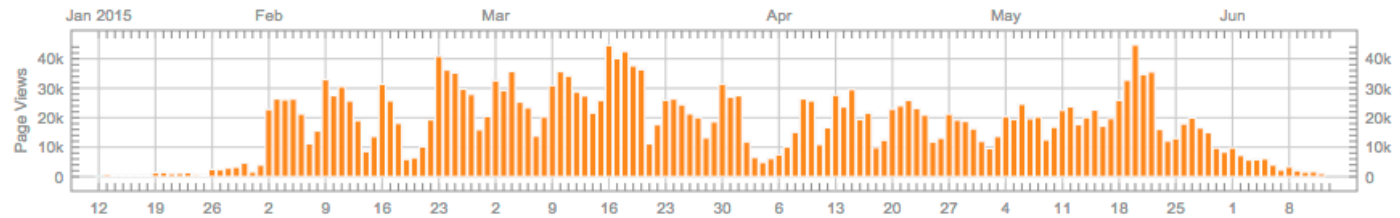
2,213  
Discussion Topics

6,082  
Files Uploaded

408  
Media Recordings

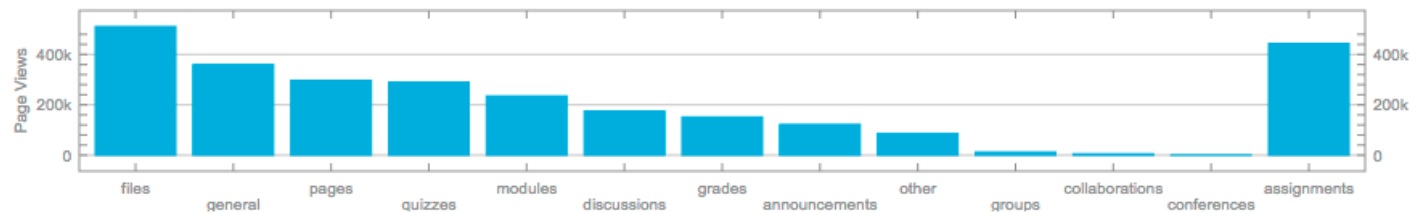
## Activity by Date

Each bar represents the number of **page views** on that day. An orange bar indicates that some user **took an action** within a course on that day.



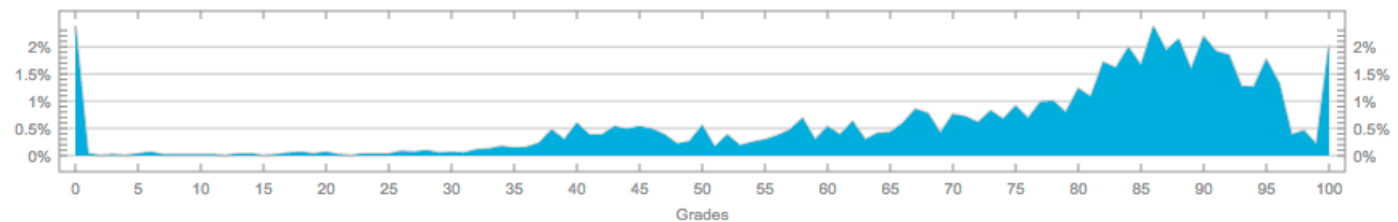
## Activity by Category

Each bar represents the number of page views related to that category.



## Grade Distribution

Distribution of current grades in courses across all students enrolled in department courses.





# Thank you!



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AND TECHNOLOGY

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# Q&A

William Wan ([william.wan@ust.hk](mailto:william.wan@ust.hk))  
Information Technology Services Center, HKUST