MEMORANDUM

Date: February 11, 2020

To: Amir Dabirian, Vice President for Information Technology/CIO

From: Berhanu Tadesse, Associate Vice President for IT / Academic Technology Services

Subject: LMS Task Force Evaluation Report & Recommendation

Dear VP Dabirian,

I am pleased to report that the learning management system evaluation task force has a recommendation following your directives of identifying the next generation learning management solution for the university. After reviewing the campus feedback, the LMS landscape across the CSU, California Community Colleges, major national universities, the task force highly recommends the university to replace the existing open-source-based Titanium with Canvas. The task force also recommends a summer 2020 pilot (by invitation) and completion of migration from TITANium to Canvas by summer 2021.

Please find the final report enclosed to this memorandum.

Regards,

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Enclosure: LMS Evaluation Report and Recommendations
cc: LMS Evaluation Task Force Members

California State University, Fullerton
Learning Management System
Evaluation Task Force

Evaluation Report and Recommendations

Executive Summary

In Fall 2019, a Learning Management System (LMS) Evaluation Task Force was formed to review the suitability of the current LMS in order to ensure the campus has a robust digital platform for teaching and learning. The Task Force, which includes interdisciplinary representatives from faculty, staff, students and administrators, met regularly through January 2020. The preliminary investigation revealed the following:

- The needs of the campus have evolved since the implementation of our existing LMS over 10 years ago and students and faculty are looking for an enhanced user experience.
- Since the implementation of Moodle, CSUF has higher institutional expectations regarding the quality of end user and IT system support.
- Infrastructure support requirements and costs have risen dramatically with the increased use of Moodle. since its first deployment.
- There has been a trend in higher education of migrating from locally hosted (server) LMS solutions to cloud computing environments.

After careful consideration, the Task Force determined that our current LMS (Moodle) is not meeting the needs of our campus. Therefore, the Task Force then focused on evaluating possible replacements to our current LMS. The investigation focused on Moodle in the Cloud and Canvas and revealed the following:

- U.S., including California, higher education institutions have moved away from the Moodle type open-source platforms.
- All California Community Colleges have adopted Canvas (by Instructure) LMS as a standard.
- CSUF Students and Adjunct Faculty who provided feedback overwhelmingly asked the Task Force to consider Canvas LMS in the evaluation.
- The total cost of ownership of enterprise systems is more economically efficient when hosted in the cloud.
- Current LMS software use among the 23 CSU campuses:
  - Canvas - 12
  - Blackboard – 5
  - Moodle - 4
  - Desire2Learn -2

Therefore, the Task Force recommends that CSUF develops a plan to replace the current locally hosted open-source Moodle LMS, with Canvas, a cloud hosted LMS by Instructure. The Task Force also proposes an implementation timeline to begin with a summer 2020 pilot (by invitation) and completion of migration from TITANium to Canvas by summer 2021

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California State University, Fullerton
Learning Management System Evaluation Project

Introduction

In Fall 2019, a Learning Management System (LMS) Evaluation Task Force was formed to review the suitability of the current LMS in order to ensure the campus has a robust digital platform for teaching and learning. The Task Force, which includes interdisciplinary representatives from faculty, staff, students and administrators, met regularly through January 2020. This report contains the information reviewed by the Task Force.

Overview of California State University Fullerton (CSUF)

California State University, Fullerton (Cal State Fullerton - CSUF) is a public university in Fullerton, California. With a total 2018 enrollment of about 40,400, it has the largest student body of the 23-campus California State University (CSU) system; its approximately 5,800 graduate student body is also the largest in the CSU and one of the largest in all of California. As of Fall 2016, the school had 2,083 faculty, of which 782 were tenure track. The University offers 109 degrees: 57 bachelor's degrees and 52 graduate degrees, including three doctorates. The University operates a satellite center in Irvine, California, approximately 20 miles south of the main Fullerton location, and the Grand Central Art Center in downtown Santa Ana.

2019-2023 IT Strategic Plan

In the development of the *2019-2023 IT Strategic Plan[1]*, the campus provided feedback for an improved Learning Management System. This feedback was incorporated into the following goal/strategy:

Goal 1: Student Success (see http://www.fullerton.edu/it_planning/goal1/)

- Objective 4: Enhance support and quality for online programs and courses
    - Strategy 4.1: Partner with the Division of Academic Affairs to study and evaluate a next generation Learning Management System

In alignment with the new strategic plan the Division of Information Technology partnered with the Division of Academic Affairs to form the Learning Management Evaluation Task Force in Fall 2019 with the charge to review and make recommendations.

<u>History of eLearning at CSUF</u>

CSUF's history of technology-based instruction was well established even before the emergence of the Internet as the preeminent underlying technology of contemporary eLearning systems. Through the early 1990s, Extension and International Programs (EIP) formerly known as University Extended Education (UEE) managed an Instructional Television Fixed Service (ITFS)-based, distance learning program using local studios broadcasting two-way audio and video to remote classrooms. In 1997, at the request of a handful of faculty members, EIP set up a local (under a desk) PC server hosting an early license-free version of WebCT for faculty to experiment with eLearning. That installation moved from EIP to the then new Faculty Development Center (FDC) in 1998, and in 1999 was moved again to IT for technology support. Faculty support was provided by the FDC.

In 2000, other faculty, finding WebCT cumbersome, requested that IT host and FDC support an instance of Blackboard. Through 1991, WebCT was phased out, with WebCT courses migrated to the new Blackboard LMS, hosted locally (on-premises or on-prem) by IT, with faculty support provided by the FDC. In 2009, CSUF's Blackboard LMS migrated to Blackboard Cloud Services as "Software as a Service" (SaaS). In 2011 the campus migrated to Titanium which was based on an on-prem, open source instance of Moodle, completely phasing out the Blackboard services by the end of 2012.

Moodle at CSUF

The status of CSUF Moodle usage for the 2018/2019 academic year is shown in Table 1. CSUF's use of Moodle, (branded as "Titanium" at CSUF) has grown significantly since it was first launched in 2011. The resources required to sustain its operation and the increased demands on the system have also been increasing steadily.

SEMESTER	COURSES
Summer 2018	1330
Fall 2018	11364
Winter 2019	158
Spring 2019	11204
ROLES	TOTAL ANNUAL USERS
Teachers	10,378
Students	50,838
Total	86,287

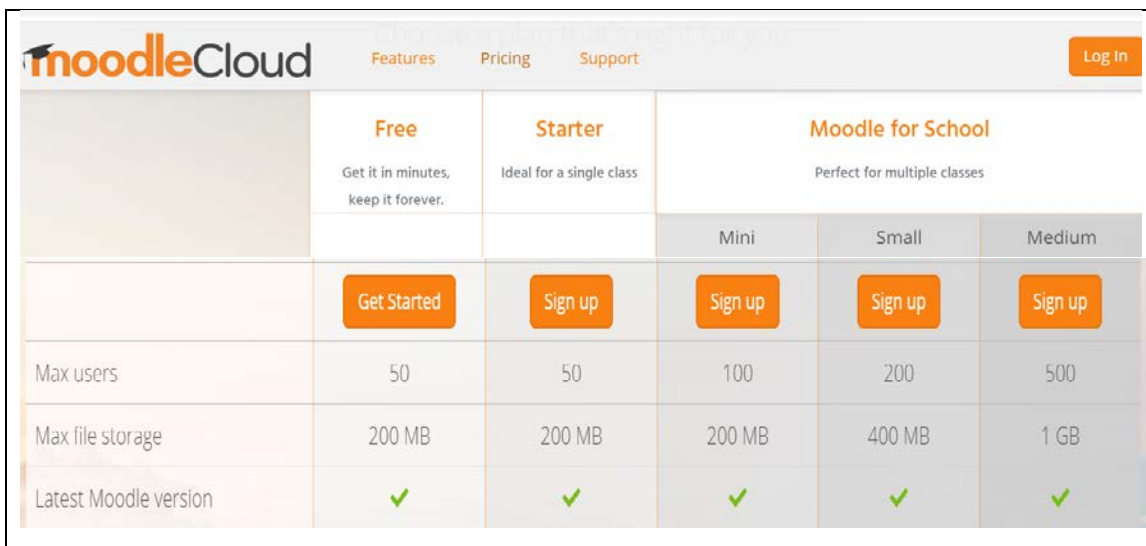<u>Table 1. CSUF Moodle Usage 2018/19</u>

Moodle Open-Source Support

Moodle is open-source software that relies on the Moodle user community for maintenance, enhancements, bug-fixes, and general support. This model has worked well in the past due to the high volume of active Moodle users. However, as more and more institutions move away from Moodle, the open-source community has declined. This has resulted in reduced and delayed support, making it difficult for CSUF LMS to stay current and up to date. This affects the quality of service that is provided to CSUF Students, Faculty and Staff.

As described elsewhere in this report, throughout the U.S. there has been significant migration of many LMS instances from Moodle to other LMSs. With fewer users these migrations have weakened community support for Moodle. CSUF has witnessed this lack of community support in a slower response to our reporting of problems, including software bugs. Due to such factors, recovering from a catastrophic failure of Titanium could be lengthy since there is minimal escalation support that can be engaged to help us to resolve such issues. As we continue to grow our online instructional activities, it is essential that we treat our LMS infrastructure as "mission critical," requiring uninterrupted operation. To accomplish this, more than adequate support is essential. By implementing a Software as a Service (SaaS) cloud-based LMS, we may be able to capitalize on the kinds of system support available from such operational environments, depending on the vendor providing that SaaS.

MoodleCloud

The LMS TaskForce explored hosting Moodle in the cloud. The MoodleCloud product offerings available from Moodle recommends a maximum number of 500 users for an instance of the LMS[2] (Figure 1). Based on the number of Students, Faculty, and Staff, CSUF campus usage far exceeds this threshold.

Figure 1. Moodle Cloud Features

LMS Infrastructure

This section describes two key technologies that affect an institution's selection of a mission critical information system: 1) open source software, and 2) cloud computing and related technologies.

1. Open Source Software. One way to characterize available LMS's that might be considered as possible migration targets is whether the software is open source (OS) or closed source (CS) - sometimes called "proprietary."

Diomidis Spinellis provides a detailed description of OS including examples of commercially support OS software[3]. For example, Red Hat, Inc., a subsidiary of IBM that markets OS products to the enterprise community, on its website[4] differentiates OS and CS as follows:

Open source: OS is publicly available for everyone to see, learn from, use, modify, and distribute. The Open Source Initiative [OSI][5] developed a precise definition for open source software. An open source license prevents restrictions on use of the software — from commercial distribution to who can use the software and for what purpose. It emphasizes neutrality, accessibility, and freedom.

Closed source: Good code—and good applications — have tremendous value. Many companies keep their code secret in an effort to control and profit from their products' distribution. Their proprietary source code is closed off from outsiders who can't inspect the code or find out how it works.

A determination of whether OS is "better" than CS produces many conflicting results leading to the simple and unsatisfying answer, "It depends." Proprietary (CS) systems can be expensive to license from their (usually corporate) owners, the cost depending on factors that include different degrees of support and maintenance.

While OS code is free, it is usually expensive for a single organization by itself to install and maintain in a production environment. Sometimes communities of support form to provide the kinds of support that enterprises require for production-level operation of an OS system – often including hosting. Such communities may be non-profits such as the Moodle OS community, or they may be for-profits such as the company Instructure which supports and provides hosting of the OS Canvas system[6.] This is unlike, for example, Blackboard[7] which also provides hosting services, but primarily for its proprietary, CS products.

Aligning with a for-profit, open source support company may be the best of both worlds – the LMS program (source) code is open, viewable, and subject to the benefits of review and innovation by a worldwide community of users and software developers. At the same time, those systems can be maintained and hosted professionally by a

support company - in the case of Canvas, by the company, Instructure. (Note that while generally irrelevant to considerations regarding the appropriateness of Canvas' potential as a CSUF LMS, Instructure was acquired in December 2019 by the private equity investment firm, Thoma Bravo, LLC.)

2. Cloud Computing. The literature is replete with references regarding benefits of moving "on-prem" (on-premises, locally hosted) enterprise software to a cloud computing, SaaS environment – see for example the article by Stamatia et al[9].

The article by Stamatia et al provides some clear justification for CSUF to consider cloud computing-based services for our future LMS needs. Forbes reinforces such justifications in the Web post, "Five Reasons Why Switching to SaaS Will Be The Best Investment You Make This Year"[10]. These reasons include lower startup and maintenance costs, reduced physical space requirements for offices and equipment, reduced software maintenance time and expense, and ease of system growth to meet changing enterprise growth. The next generation LMS for CSUF needs to run cloud computing-based SaaS to capitalize on the benefits listed above and to ensure that the LMS meets the future, growing needs of our faculty and students. Also, applications in the cloud can be provisioned and de-provisioned very quickly. When there is fluctuation in demand, resources can be scaled up or down quickly – essentially impossible in an on-prem environment.

CSUF's experience with cloud-based systems has been very positive. Operational improvements achieved as a result of implementing cloud-based solutions like Dropbox, Office 365 and Adobe Creative Cloud have been very impressive. In any case, the CSUF IT Strategic Plan specifies as a goal, the migration of our enterprise applications to the cloud.
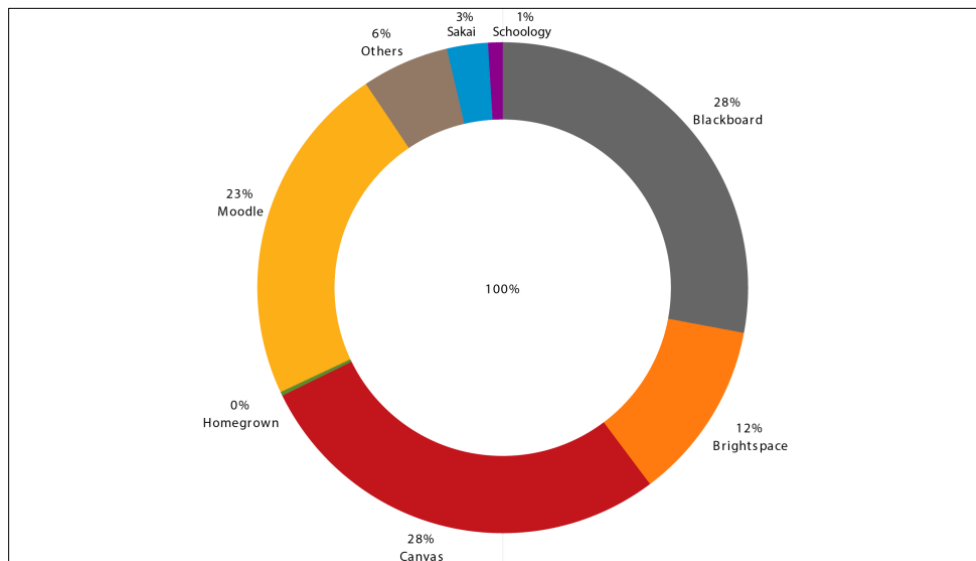
Reviewing LMS Alternatives

The section describes evolving trends in LMS migrations and adoptions in United States higher education over the last decade, and includes a rating comparison of the leading LMS's. These were presented to the Task Force committee.

The U.S. Higher Education LMS Landscape

The history of eLearning in higher education is many decades old, beginning in the early 1960s under labels such as computer-assisted-instruction (CAI) and computer-managed-instruction (CMI). Since then, eLearning has been continually transformed through the development of myriad hardware and software technologies that have affected that transformation. Probably the most significant impacts on eLearning since the 1960s have resulted from 1) the availability of relatively inexpensive computing hardware (PCs, laptops, mobile devices, servers, communications gear, etc.), and the emergence of Internet and World Wide Web network communications standards. During the last 20 years, eLearning (LMS) platforms have also continued to evolve, each rising and diminishing in popularity and utility, depending on how well those

platforms' vendors have been able to adapt to new, emerging eLearning trends and technologies.

Because of such dynamics, it is essential to understand the current LMS landscape in order to select an LMS that will serve our community well for the foreseeable future. We should also examine current LMS adoption trends in U.S. higher education and try to benefit from the experiences of our colleagues elsewhere. Figure 2 shows the "penetration rate" of the leading LMS systems in U.S. education systems in July 2018[11]. At that time, the leading "contenders," Blackboard and Canvas were tied at 28% of all (major) installations.

Source: https://insidehighered.com/digital-learning/article/2018/07/10/canvas-catches-and-maybe-passes-blackboard-top-learning

Figure 2. U.S. Primary LMS Systems, July 6, 2018

However, Figure 3 is more revealing, indicating the trend in growth of the LMS's. Since 2016 the number of Blackboard installations has been decreasing and the number of Canvas installations has been increasing[12]. This is clearly an important trend in considering the replacement of an LMS.
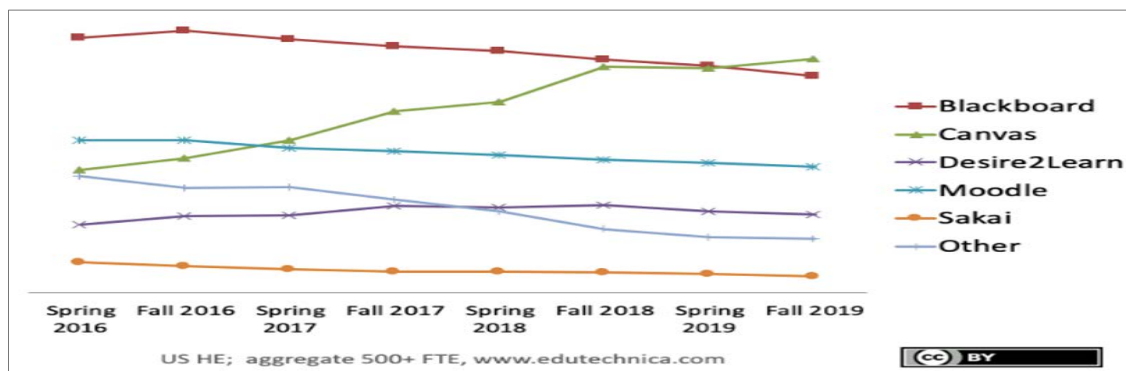

Figure 3. LMS Growth Trends

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February 2020

As illustrated in Figure 4, Canvas is the only LMS that has seen an increased number of installations[13].

Source: https://philonedtech.com/lms-decommissions-a-view-of-lost-clients-and-campus-closures/
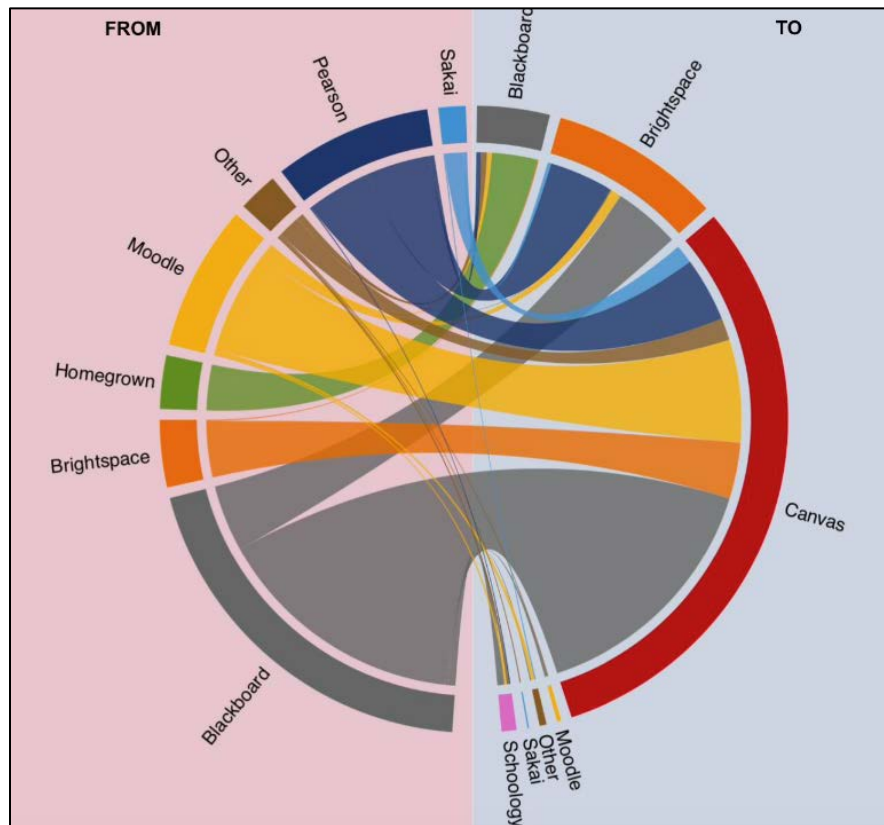
Figure 4. LMS Migrations 2017-19: From Where to Where

Figure 5 below contains a list of reputable higher education institutions that are current Canvas subscribers[14], and Figure 6 shows changes in LMS adoptions by "Big 10" institutions from 2015 through 2018[15]. Figure 7 shows a current list of Canvas subscribers in public California higher education institutions.

Canvas Subscribers (100)		
• Auburn University	• La Salle University	• University of Colorado - Colorado Springs
• Ball State University	• Lasell College	• University of Colorado - Denver
• Baylor University	• Longwood University	• University of Delaware
• Brown University	• Manhattan School of Music	• University of Denver
• Bucks County Community College	• Michigan Technological University	• University of Kentucky
• California Polytechnic State University - San Luis Obispo	• Middlebury College	• University of Mary Hardin-Baylor
• California State University - Channel Islands	• Missouri University of Science and Technology	• University of Maryland - College Park
• California State University - Los Angeles	• New Jersey Institute of Technology	• University of Missouri - Columbia
• California State University - Northridge	• New Mexico State University - Main Campus	• University of Missouri - Kansas City
• California State University - Office of the Chancellor	• Northeastern University	• University of Missouri - Saint Louis
• California State University - Sacramento	• Northern Kentucky University	• University of Nevada - Las Vegas
• Carnegie Mellon University	• Northwestern University	• University of Nevada - Reno
• Case Western Reserve University	• Oklahoma State University - Main Campus	• University of New Hampshire
• Champlain College	• Rice University	• University of North Carolina - Charlotte
• Chapman University	• Rider University	• University of North Carolina - Greensboro
• Claremont Graduate University	• San Jose State University	• University of Oklahoma - Norman Campus
• Clark Atlanta University	• School of the Art Institute of Chicago	• University of Oregon
• Colorado College	• Sonoma State University	• University of Pittsburgh - Pittsburgh Campus
• Colorado School of Mines	• Southern Methodist University	• University of South Florida
• Columbia University	• Stanford University	• University of Tennessee
• Cornell University	• Teachers College - Columbia University	• University of Tennessee at Chattanooga
• Dartmouth College	• Temple University	• University of Tennessee-Martin
• East Carolina University	• Tulane University	• University of Utah
• Eastern Michigan University	• University of Alabama - Huntsville	• University of Washington
• Emory University	• University of California - Berkeley	• University of Wyoming
• Fort Lewis College	• University of California - Davis	• Utah State University
• Franklin & Marshall College	• University of California - Hastings College of the Law	• Wake Forest University
• Georgetown University	• University of California - Irvine	• Washington University in Saint Louis
• Guilford College	• University of California - Merced	• Wayne State University
• Humboldt State University	• University of California - San Diego	• Williams College
• John Carroll University	• University of California - Santa Cruz	• Wingate University
• Kansas State University	• University of Central Florida	• Worcester Polytechnic Institute
• Keene State College	• University of Chicago	• Yale University
	• University of Colorado - Boulder	

Source: https://www.internet2.edu/products-services/cloud-services-applications/canvas/canvas-subscribers/

Figure 5. Current Canvas Subscribers (Major US Higher Education Institutions)
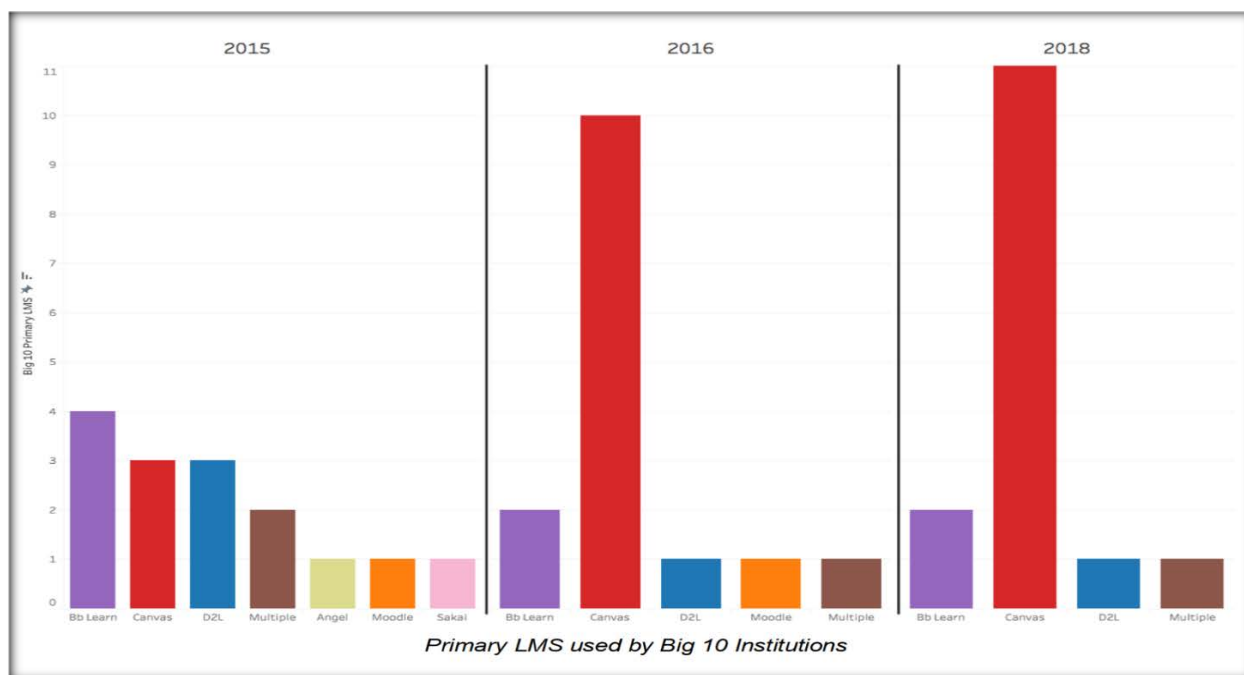
Figure 6. LMS Migrations by Big 10 Institutions from 2015 to 2018

CSU
- Cal Poly – SLO
- Sacramento
- Northridge
- SJSU
- Channel Islands
- Humboldt
- Los Angeles
- Fresno
- Sonoma State
- CAL Teach
- Bakersfield – Live active Pilot
- Stanislaus – Live active Pilot
- SDSU – Live active Pilot

UC
- Berkeley
- Davis
- Irvine
- San Diego
- Santa Cruz
- Merced

Community Colleges
- All 114

Source: Canvas Representative Eddie Sampson, Nov 2019

Figure 7. Current California Higher Education Canvas Subscribers

It should be noted that institutions seeking to deploy the open source LMS Moodle in a professionally supported cloud environment, until 2018 had the option of selecting Blackboard's Moodlerooms. However, in September 2018, Blackboard parted from the Moodle community, was forbidden to use the label "Moodle" in any of its product offerings and changed the name of Moodlerooms to Blackboard Open LMS (BOL). BOL is not a Moodle community-supported product, hence any changes in Moodle functions and features made by the Moodle community since that corporate "divorce" may or may not be included in BOL, thus making BOL a questionable choice for longtime Moodle users considering migrating to a cloud version of Moodle from an on-prem version.

Figures 2-7 shows LMS installations in U.S. higher education which consist of movement from various LMS' to cloud-based Canvas. In considering alternative LMS's as options for CSUF, it seems advisable that we capitalize on the countless hours and resources already invested by U.S. higher education institutions who have compared available LMS's as potential candidates for their institutions' requirements.

Industry Reviews of LMS's

In order to compare unbiased reviews of Canvas, Moodle, Desire2Learn (D2L), and Blackboard, a Google search of the World Wide Web was conducted using the keyword phrase "*compare lms systems*." Table 2 shows three corporate Information Providers' reviews; these Information Providers (reviewers) were selected because they do not appear to promote any particular LMS, hence seem to be "agnostic" in their assessments. Table 2 shows that all three Information Providers rate Canvas higher than the other LMS's. The Information Provider Capterra's reviews also rates Canvas higher on three of four criteria (Ease of Use, Customer Support, Features & Functionality, and Value for Money) for all the LMS's. The rating for "Value for Money" is tied with Moodle.

Information Providers	Canvas	Moodle	D2L	Blackboard
1. Capterra https://www.capterra.com/learning-management-system-software/compare/14500-122854-127214-80691/Blackboard-LMS-for-Business-vs-Brightspace-vs-CANVAS-vs-Moodle Average Overall Score (out of 5)	4.5	4.1	4.06	3.82
2. Finances Online https://comparisons.financesonline.com/canvas-lms-vs-brightspace Overall "SmartScore" (out of 10)	9.1	9.0	8.8	9.0
2. Software Advice https://www.softwareadvice.com/lms/?utm_source=google-search&utm_medium=ppc&utm_term=compare%20lms% Overall Satisfaction (out of 5)	4.5	4.0	4.0	4.0

Table 2. Comparative LMS Reviews

On December 5, 2019, the company eThink (the Moodle for-profit support company) conducted a public webinar, *Hacking the LMS Evaluation Process: Strategies and Considerations for a Smooth Selection*[16]. Attendees were told by the presenter, Randy Jones, "the LMS industry has nearly reached feature parity." That is, almost all LMS's today have approximately the same features, and a feature-by-feature comparison is unlikely to yield startling differences among LMS's.

Web-based testimonials from "satisfied" Canvas users from around the country were sought out by the Task Force; almost all were virtually unanimous in their praise of that LMS. Some of those testimonials are shown in Table 3.

Institution	Video Access Link
California Community College System (3.05)	https://www.youtube.com/watch?v=GYkymu5BdRI
Embry-Riddle: RELIABILITY (0.59)	https://www.youtube.com/watch?v=SKTqyEmj22M&feature=youtu.be
Eastern Michigan: INNOVATION (0.50)	https://www.youtube.com/watch?v=oYL-lx89HVA&feature=youtu.be
Seattle Pacific: ADOPTION (0.58)	https://www.youtube.com/watch?v=kSFocPMgCFI&feature=youtu.be
Palo-Alto: EASE OF MIGRATION (0.55)	https://www.youtube.com/watch?v=EucfobWP1ko&feature=youtu.be

Table 3. Canvas Higher Education Testimonial Videos

Task Force Evaluation Activities

Ultimately, the most important consideration when adopting an LMS is the satisfaction of end users - instructors and learners. Other factors such as the quality of IT and end user support as well as comparative Total Costs of Ownership (TCO) are also essential considerations. Because of time and schedule constraints, the Task Force primarily focused on matters related to end user matters and not on support and cost factors. IT staff assured the Task Force that these will be well-considered in negotiations with any preferred LMS vendor.

During the evaluation process, the Task Force focused on the following activities/events:

i) On November 12, 2019, members of the Task Force participated in an online meeting with Dr. Beverly Bondad-Brown, Director of Academic Technology at California State University, Los Angeles (CSULA). The Task Force wanted to understand the processes and decisions that CSULA undertook to migrate from Moodle to Instructure-supported Canvas. The CSUF Task Force was provided with CSULA's instructor survey results (available to readers, but not included with this report) that enabled CSULA to reach their decision to migrate to Canvas.

ii) On December 12, 2019, CSUF IT Communications posted the Web announcement and "call for feedback." Based on feedback that was collected following the campus announcement of the formation of the LMS Evaluation Task Force, the comments were positive overall in support of Canvas LMS. A number of responses recommended

Canvas to be chosen for the next campus LMS and stated that they are already familiar with its functionality and ease of use. Some faculty members indicated that it is used at their local community colleges and that they have user-experience with Canvas from a parent perspective also. Other responders indicated that they pilot tested Canvas at Cal State LA and enjoyed the relative ease of posting and editing of content. A few faculty members voiced some frustration with the current LMS Moodle and also recommends that we move to a system that is easier to embed quizzes and has the ability to integrate assessment software with the LMS.

iii) On January 9, 2020 Canvas representatives Eddie Sampson and Dave Lyons conducted an in-person Canvas workshop at CSUF. The session consisted of a two-hour, in-depth presentation of Canvas features followed by a discussion of course migration issues, from Moodle to Canvas. That discussion was based on the work done by CSUF IT staff to preliminarily explore migrating Task Force members' courses shown in Appendix B, from Moodle to Canvas. Attendees' comments – all relatively positive – are described in more detail at the January 16 Task Force meeting described below.

Final Deliberations and Recommendation

On January 16, 2020, the Task Force met to review matters discussed in previous Task Force meetings. These are summarized below as "enterprise" and "local" considerations.

Enterprise Considerations

- There is a shift to move from a locally hosted solution to Software as a Service (SaaS) in the cloud.
- Canvas Instructure provides 24x7 technical and end user support for institutions as large as CSUF; this level of support is unavailable for equivalent-sized Moodle installations
- Instructure response times to technical issues are much shorter and more reliable than Moodle's community-based response times
- Comparative reviews of higher education LMSs unanimously rate Canvas higher than its competitors (see Table 3).
- Canvas has better interfaces to new and emerging teaching and learning software technologies and applications.

Local Considerations

- A majority of prestigious U.S. higher education institutions are abandoning their legacy LMS and moving to Canvas.
- More than half of CSU campuses have or are moving to Canvas.
- 100% of California Community Colleges use Canvas; transfer students and a majority of CSUF adjunct instructors may already be familiar with Canvas.
- Preliminary CSUF feedback regarding was overwhelmingly positive.

Also presented at this meeting were the industry reviews of LMSs shown in Table 2.

***The Task Force recommends that CSUF replace the current
LMS Moodle with the Instructure Canvas.***

Once Canvas LMS has been approved and once the terms of an agreement with Instructure are determined, a project plan should immediately be announced to the campus. The Task Force also strongly recommends that budget is allocated for faculty support to address issues that may arise when migrating courses from TITANium Moodle to Canvas. The project proposed timeline, as shown in Table 4, is to start in Spring 2020 which would allow for Canvas to be operational beginning in Summer 2021.

Project Milestones	Timeline
Develop a migration plan	Spring 2020
Develop a phased migration timeline	Spring 2020
Pilot	Summer 2020
Migration Year	Fall 2020/Spring 2021
Fully converted to new LMS	Summer 2021

Table 4. Proposed Project Timeline

References

1. *2019-2023 IT Strategic Plan*

2. Moodle Community Website: https://moodle.com/moodlecloud/

3. Spinellis, Diomidis. (2019 December). How to Select Open Source. *IEEE Computer Magazine*, Pp. 103-106.

4. Red Hat Website: https://www.redhat.com/en

5. OSI Model: https://en.wikipedia.org/wiki/OSI_model

6. Instructure Website: www.instructure.com

7. Blackboard Website: www.blackboard.com

8. Website for Thoma Bravo, LLC: https://www.thomabravo.com/

9. Stamatia, B., Katsaros D., & Bozanis, P. (May/June 2012). Business Application Acquisition: On-Premise or SaaS-Based Solutions? *IEEE Software Magazine*, Vol. 29, Pp. 86-93.

10. Five Reasons Why Switching to SaaS Will Be the Best Investment You Make This Year, Mark Rhyman, Forbes Tech. Council, May 15, 2017, https://www.thomabravo.com/

11. Canvas Catches, and Maybe Passes, Blackboard, (July 10, 2018). Lindsay McKenzie, Inside Higher Education, , https://www.insidehighered.com/digital-learning/article/2018/07/10/canvas-catches-and-maybe-passes-blackboard-top-learning

12. 7th Annual LMS Data Update, *edutechnica*, October 7, 2019, https://edutechnica.com

13. LMS Decommissions: A view of lost clients and campus closures, Phil Hill, Oct 19, 2019, https://philonedtech.com/lms-decommissions-a-view-of-lost-clients-and-campus-closures/

14. Internet2 Canvas Subscribers. https://www.internet2.edu/products-services/cloud-services-applications/canvas/canvas-subscribers/

15. Big Ten Universities LMS Snapshot - Purdue University. https://www.purdue.edu/lms-review/Documents/Big%2010%20LMS%20Update.pdf

16. Hacking the LMS Evaluation Process: Strategies and Considerations for a Smooth Selection [eThink Webinar]. (2019, December 5). https://www.youtube.com/watch?v=LnS3ofxIjqc&feature=youtu.be:

APPENDIX A

CSUF Learning Management System
Feedback Report

Q - We welcome any feedback you may have.

I'm part-time lecturer at CSUF but I also work as the full-time Information Systems Manager at Mater Dei High School. Can I recommend Canvas as the LMS if we're no longer going to use Moodle? It might be better to build a custom one eventually too though. My counterpart at UCI built the one they use at UCI. I'm a Python developer if you ever need help building a custom one for CSUF.

At other institutions in the past, I have used ANGEL and Blackboard (I believe it may be based on Moodle also), as instructor and/or student. At the time (sometime between 2002-2012), both LMSes were easy to navigate and use and not prone to too many problems. So, I could recommend both based on experience, though my experience may be somewhat outdated. I teach online courses regularly, so if needed, I am happy to help review / evaluate potential LMSes you may be considering.

Here's my concern: I worked at a campus before that switched from Blackboard to Canvas. HUGE learning curve. That's concern 1. Here is concern #2: This semester I'm teaching an online section of my course in addition to face-to-face sections. I'm concerned that all the activities and quizzes I am making in Moodle will not transfer over to the new LMS. I know I can import my files and videos, but what about tests and assignments made within the Moodle system? How much time am I wasting? Thank you.

I've been using Canvas during 2014-2019 in other universities and it supports a lot more functions than Moodle. For example, my grading rubrics and guidelines can be exported and imported. Blocks can be folded and unfolded. Hyperlink to assignments, quizzes, learning materials within the course are more convenient to embed.

I am interested in being an early adopter Summer 2020. What is the process for selection of early adopters?

So excited to hear we will have a new LMS! When the time is appropriate, I would like to be part of a pilot faculty group concerning course design and implementing the new system.

There are some great things about Canvas -- like the grade book! It is so easy to use and grading is MUCH easier than in Moodle.   However, I like Moodle much better for the user face and the interactivity. Moodle makes course pages colorful, inviting and interesting. Canvas is very boring and it take A LOT of time to make it "pretty". Also, Canvas is not good at copying content. It is clunky and if you teach multiple sections copying content each week is challenging. Also, students have a hard time finding content in Canvas. Things are hidden, hard to find and they get lost easily looking for weekly work. I would like to stay with Moodle at CSUF.

Report of the CSUF Learning Management System Evaluation Task Force
February 2020

Thanks for the heads up on the upcoming changes to the LMS. I frequently teach online/hybrid courses and am trying to plan out course adjustments to go with these LMS adjustments. I wanted to clarify the timeline below.   If we are not an "early adopter" of the LMS in Summer 2020 will we still be able to use Titanium up through the Spring 2021 semester? I am trying to analyze a course component, and keeping the LMS fixed during that period would be important. Thanks in advance

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As an instructor at CSUF, Orange Coast College, and Saddleback College for many years, I have experienced several LMS platforms to work with and navigate successfully for both myself and students. In addition to Titanium, my experiences have or are currently with Canvas, Blackboard, WebCT, and Seaport, a proprietary LMS from Coastline College. Since there are numerous LMS designs that are available, one stands out for Fullerton to not only review but should definitely choose as the new LMS. The one I recommend is Instructure's Canvas. There are reasons for this recommendation. They include the following: 1 - Canvas is highly robust with an ample and large amount of features. 2 - Canvas integrates with a variety of apps. 3 - Instructor comments on assignments are available in the grades. 4 - Importing/exporting Canvas shells for each semester are simple. 5 - Canvas dashboard and listed courses are easy to view. 6 - The majority of California Community Colleges are now using Canvas including OCC, Saddleback, and Coastline. 7 - Students at Fullerton would welcome Canvas as those who transfer from the CC's are accustomed to the system. These are the primary features that I have found to be highly desirable in working with Canvas versus all the other LMS systems.

Greetings LMS project team, I am a new faculty member responding to the announcement sent out today about the LMS Project. I am wondering whether you may be interested in contacting a company called TopHat? https://tophat.com/classroom/learning-management-system/   TopHat is not a Learning Management System, but they do partner with institutions and work with their IT teams to make materials more accessible from a cost perspective, and from my initial conversations with them they claim to improve user experience through tight integrations with existing systems. The reason I suggest TopHat is that I have been investigating different options on my own for about 6 months that would improve the weekly organization of my course and offer up-to-date and less cost prohibitive learning materials to both undergrad and grad students. The text book and associated software for my anatomy & physiology class is too expensive for most of my students. Also, I learned as much as I could about Titanium and really pushed its boundaries this semester. I found it very useful, but it was a lot of work (even with tremendous help from IT for faculty) to seamlessly import images from other applications, upload articles from a variety of sources, import videos, and find open source learning material that provided accurate and updated information.   I encourage you to check out the link I provided above. I would appreciate your input and expertise to help in my decision-making. I spoke a couple times with Thomas Lowe, a salesperson for TopHat. I know he had a meeting set up with the chair of the communication department (Jason). I found him very helpful and reasonable. If you would like his email and phone number, I am happy to provide it.   Thank you for your time.

Hi all, As the course coordinator for Biology 101, I'm absolutely delighted to hear about this effort! While the current Titanium implementation is ok, it presents some rather substantial hurdles for those of us who manage the sites for multiple sections. For the Biology 101L labs, there are usually around 22 sections each semester that are taught by graduate TAs. The process for setting up all of these sections are near-duplicates, but not quite identical duplicates, is extraordinarily cumbersome. I use the backup & restore process, but having a solution that would allow greater flexibility regarding

linking courses together would be wonderful, since it would save me significant time throughout the semester. In addition, a better means of tying these sections together would allow me to more easily aggregate data across these sections to evaluate how various assignments are contributing (or preventing) student success. I can do that now, but only by exporting data from each individual section. I'm happy to provide any details, use cases, etc. that will help the evaluation team! In addition, if there is any testing or early adoption that the implementation would like to try with a course involving multiple sections, please let me know.

Hi, It would be nice to know what are MLS's being reviewed.

Hello, I just read the e-mail about acquiring a new LMS for Cal State Fullerton. Please, please find a system that allows for 24 hour customer support. I have used Canvas at other institutions and love that I can get help at any time of the day from a live person. The support, as it exists now, is very limited.

Hi everyone, I can certainly understand that we may need to change LMS... but please give us (faculty) plenty of time to learn how to use whatever comes next and make the change over.

As a STEM professor, my biggest concern is that any new learning system features the ability to set robust quantitative and computational questions in a quiz. The current Moodle implementation is somewhat limited in this regard. The STACK plugin did allow for mostly satisfactory questions to be created, and I would like to ensure that all functionality available through the STACK question type was available in the new LMS. An example of a critically required feature would be the ability to set questions which allow for multiple sub-questions using scrambled figures. An example such question might be: "A ball is launched at an angle [q] degrees above the horizontal with an initial velocity [v] m/s. Calculate: a) The ball's maximum height: y = [] meters b) The ball's total flight time: t = [] seconds c) The ball's range: x = [] meters" Where [q] and [v] would be randomized numbers (so every student gets a different version of the question) and the student would enter 3 values to receive full credit. This sort of question was problematic to set using the Moodle setup (save through the STACK plugin, which was still a bit quirky).   While there were some features in Moodle, such as allowing randomized variables to be shared among questions (i.e., parts a), b) and c) could be three separate questions with the same [q] and [v]), I think many STEM professor's would like to be able to set 1 question with multiple parts, not have to set three independent question with common variables. The latter arrangement is an inelegant presentation to the student, more laborious to create three questions (and program the shared variables) instead of 1, and defeated one of the standard points of such questions, which is that the answer to an earlier question can be used in answering a later one. STACK's ability to assign questions where students give a symbolic answer (e.g. they derive a formula and enter the final equation) was also very useful and would be good to retain.

yup...good times ahead

Thank you so much because I am looking forward to a more user-friendly system that does not have as many problems.

It took me two years to learn to use Titanium. It takes a lot of time to learn to use LMSs and it would really hinder my teaching if I have to relearn everything again. Sure, Titanium isn't perfect, but we

also need to understand the amount of effort faculty will need to put in to adjust to changes. All my resources are on Titanium so changing it will also require me to redo everything.

Based on this article, I recommend including Canvas among the LMS options for evaluation: https://www.pcmag.com/roundup/336308/the-best-lms-learning-management-systems Thank you for moving forward with LMS upgrade!!!!! Moodle IS out of hand -- I'm no rocket scientist, but even if I was I'd still likely struggle with the complexity and slowness of Moodle.

Is there a reason why a staff representative was not put on this task force? "With that, a campus-wide task force has been formed with representatives from faculty, students and administrators to evaluate potential LMS systems and provide the campus community with a recommendation." Many staff work with Moodle to assistant faculty, students, and administrators and it appears that one important component of excluding a staff member is not being inclusive as CSUF mission states. Disappointed.

I'm a faculty member in my first semester in the philosophy department. At my previous institution, we used Canvas. It was much more user friendly and flexible than Moodle, in my experience. So, I'd vote to replace Moodle with Canvas if those were the only options.

I highly recommend Canvas!! I was one of a handful of faculty who pilot tested it at Cal State LA, then taught with it as it was implemented campus-wide. I really enjoyed the relative ease of posting and editing content. I hope you will consider Canvas as a potential LMS replacement.

As an instructor at CSUF, Orange Coast College, and Saddleback College for many years, I have experienced several LMS platforms to work with and navigate successfully for both myself and students.   In addition to Titanium, my experiences have or are currently with Canvas, Blackboard, WebCT, and Seaport, a proprietary LMS from Coastline College. Since there are numerous LMS designs that are available, one stands out for Fullerton to not only review but should definitely choose as the new LMS. The one I recommend is Instructure's Canvas. There are reasons for this recommendation. They include the following: 1 - Canvas is highly robust with an ample and large amount of features. 2 - Canvas integrates with a variety of apps. 3 - Instructor comments on assignments are available in the grades. 4 - Importing/exporting Canvas shells for each semester are simple. 5 - Canvas dashboard and listed courses are easy to view. 6 - The majority of California Community Colleges are now using Canvas including OCC, Saddleback, and Coastline. 7 - Students at Fullerton would welcome Canvas as those who transfer from the CC's are accustomed to the system. These are the primary features that I have found to be highly desirable in working with Canvas versus all the other LMS systems.

Hi, I am very interested in the use or development of a new LMS--I'm not a big Titanium fan. Some issues I see with Titanium are: * The features of Titanium change from year to year without any heads-up for faculty. Some of these changes are good (just found out that I can drag-and-drop files to add to Titanium instead of going through menus to add a new resource) while some are not great (why put checkboxes next to every item I have on my Titanium page?). Maybe this is just a communication issue with IT. * It can take a lot of mouse-clicks to add/modify settings for grade items and files--very tiring/aggravating * It would be nice to allow faculty to design the Titanium page more like a webpage (e.g. place text, links to files or other websites, add dividers/coloring/figures, etc.). The first two items are possible with Titanium (by adding a label and/or other resource), but other page formatting is not possible. * Make it easier for faculty to see what the students will see (or make

the two views (student and faculty) consistent). I learned how to use rubrics with Turn-It-In earlier this year, but just the other day I found out that students were unable to access the rubric when they viewed their graded assignments. * Make the import of previous Titanium pages consistent and easier to do (sometimes parts of the Titanium page get messed up during an import) * Allow faculty to send individual students or groups of students (or the whole class) emails via the LMS (and allow bold/underline/italics to be used in the email message) * Lastly, allow the option for faculty to have a "dropbox" where students will submit all of their assignments (or a method to grab all submitted assignments from a particular student for a class) and a method to download this. It can take a while to navigate from assignment submission to assignment submission and find the student each time (I see this during office hours), rather than just being able to grab all assignment submissions from a student. If possible, allow the ability to use Turn-It-In to scan each assignment in the "dropbox." This "dropbox" feature and behavior is offered by Sakai, an open-source LMS used at my previous institution.

Can you be more specific about how exactly Moodle is failing to fulfill our needs as faculty/students? The explanation seemed unnecessarily vague...

Please stop the madness with Titanium....so user-unfriendly.   Also, most students are coming to us from K12 with an extensive Canvas experience. All the CC are using Canvas and Chapman University is also transitioning to Canvas this Spring - full implementation in the fall.   Please switch to Canvas!!!! Bb is bulky, expensive and tiresome.   If you need faculty members to be apart of the evaluation team...I nominate myself!

Hello! I just came to CSUF this fall as a new faculty member. In previous positions both as a student and faculty member, I have used multiple LMS platforms, including eCollege, Blackboard, and Canvas. When I arrived at CSUF and learned that Moodle was the backbone of our LMS, I was excited about it. It gave me a chance to learn a new LMS. However, I have learned the Moodle is a clunky, counterintuitive, and subpar tool for the caliber of our university. For example, I will be manually calculating my fall semester grades - for all 93 students - because I do not have confidence in the Titanium grade book. I was encouraged to do this by fellow faculty so I am not alone in this concern. I believe we need an LMS that is not "share ware." We need an LMS that is well established with bonafide, concentrated support. I know many talented people worked hard on Titanium and I applaud them for their efforts, but I must admit that I was THRILLED to see this email this morning. If I could offer my recommendation, I would say that Canvas would be an excellent tool for us to use here at CSUF. Faculty and, most importantly, students deserve better than our current system. Thank you!

Hopefully, we will consider Canvas?

PLEASE provide links to Turnitin and something similar to grademark with the new LMS

I have heard from students and faculty at other universities that Canvas is amazing. I realize it is very pricey, but with so many classes and even entire programs being completely online, investing in a high-quality LMS seems wise.

This is good news that we're moving away from Moodle. I have reservations about a cloud-based system, though, because they are always slow. Campus internet connectivity is already spotty in some places (especially in basement classrooms), plus most students and faculty do most of their work off campus. If you go with a system where file transfers are slow, you won't have solved anything. My

top priorities would be: * user-friendly experience for instructors and faculty (Moodle is awful at this, and simple tasks in other LMS products like copying an item from one course to another are really clunky in Moodle). * better options for delivering course materials and interactivity in online/hybrid courses. * it HAS to be a good mobile interface. * more reasonable file size limits -- we have students and faculty producing a lot of video-based course materials and assignments. A 100 mb file size limit was a quaint, outdated idea 15 years ago. It's ridiculous now. I have to use Dropbox now for about half my assignments because they won't fit on Titanium. * ability to archive student work and integrate assessment software with the LMS.

Wonderful news..I teach a few on-line classes and would really like a LMS that allows me to embed quizzes into videos I show for my class. This has been a big obstacle currently.

As someone who works on campus as an academic advisor and as an instructor at community colleges, I highly recommend Canvas. It is fairly easy to use, has tons of great features and add-ons, and many of our students are familiar with it from their own experience either with dual enrollment or community college work. I'd like to be on the task force, if possible!

My hope is that there will be more faculty than administration involved in the decision making process. And, I hope there is technical support available 24/7.