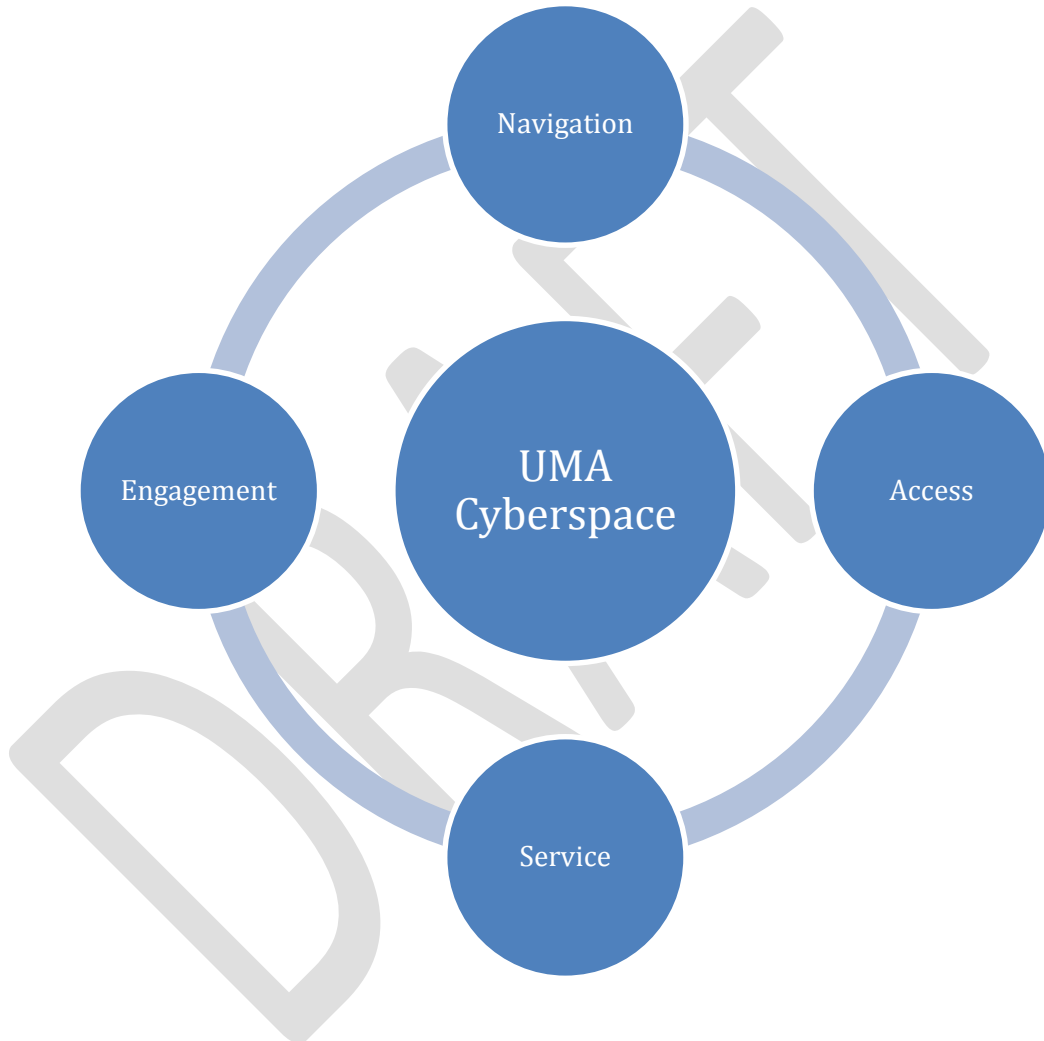


UMA Strategic Plan
Vision 2.0
Cyberspace Masterplan

April 2018



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Cyberspace Master Plan Executive Summary

Vision 2.0 [Call to Action](#) - Develop a “Cyberspace” Master Plan to provide all students with digital pathways to services & support.

The Cyberspace Master Plan calls for an environment where students are able to easily access information, communicate with faculty and staff, and conduct transactions using the device(s) of their choice. Moreover, UMA’s cyberspace has tremendous potential to strengthen a student’s sense of belonging to UMA and promote student engagement in the UMA community.

Summary of Recommendations

The Cyberspace Master Plan recommendations build within the parameters of the current IT structures and systems. The table below lists the recommendations as well as an implementation readiness and timeline indicator level.

Level 1: Some resources and planning in place; pursue implementation in 2018.

Level 2: Planning needed to identify resources and strategies; pursue 2019 implementation.

Level 3: More exploration needed to determine feasibility and resources.

Cyberspace Master Plan Summary of Recommendations	Level
Navigation	
Establish the portal as the clear front door for digital services and support	1
Adopt task-based navigation for the portal and web; Integrate & Unify Technology	2
Mobile Access	
Invest in mobile access to UMA SIS, LMS and portal	2
Create a UMA APP	1
Pursue partnerships to provide mobile devices to students	3
Service	
Introduce on-demand concierge service via full presence capable technologies	2
Pilot Dynamic Q & A Tool	1
Improve customer service (hand-offs and response times)	1
Expand embedded services & information in classes	1
Improve registration information & procedures	1
Explore navigator/coach model	3
Engagement	
Hire/assign dedicated staff to build online engagement activities	1
Create specific space(s) for online engagement	3
Gamify and Incentivize Participation	2
Establish online clubs/student organizations	2
Provide community with Adobe Creative Cloud and “Maker Spaces”	3
Regional location engagement	1
Increase asynchronous and hybrid Options	1
Continuation	
Create a group to monitor the implementation of this plan and to make provisions for continuous improvement.	1

Cyberspace Master Plan Report

Vision 2.0 [Call to Action](#) - *Develop a “Cyberspace” Master Plan to provide all students with digital pathways to services & support.*

Introduction & Committee Work

UMA is an early adopter of technology-delivered education. In the 1980’s, we developed a cohesive operation combining live television broadcasts of faculty lectures, landline telephones for interactive communication, mail service to move paper copies of student work, and staff at local sites and centers to provide student services. As technology and program offerings evolved, there have been on-going improvements, additions and upgrades. UMA’s online enrollment now comprises over 50% of credit hours and every aspect of UMA’s operations has a cyberspace presence. We are in an era of mobile generation students. Students want access from their mobile devices and they expect instantaneous interaction and response. Our current offerings are robust; but, like a house that has been added to and updated in bits and pieces over time, not everything in our approach is in full alignment. The sense of the whole is less than the sum of its parts.

The notions of cyberspace and information architecture are relatively new and very dynamic. UMA’s cyberspace is accessible through the UMA website and student and employee portals (Liferay), and is anchored by its Learning Management System (LMS) Blackboard and Student Information System (SIS) MaineStreet. UMA’s Information Technology is provided by the University of Maine System (UMS IT), which has both benefits and constraints.

This report focuses on the charge of *providing all students with digital pathways to all learning & support services*. Committee members approached this task through research, tracking of trends both in and outside of higher education, and our collective experience with UMA students. For the scope of this report, we worked within the parameters of the current IT structures and systems. We believe our recommendations are qualified and thoughtfully targeted at the goal of improving student digital services and support while also serving as a valuable starting point to conceptualize and inform a future comprehensive UMA/UMS Cyberspace Master Plan.

Committee Work – Capturing the Student Voice

In order to give students the best possible experience, the committee sought direct student feedback through its two student members, focus groups (one conducted by EAB and one conducted by BerryDunn, inc. for the UMS IT) and survey information (conducted by SGA and Noel Levitz).

What our Students Said: Quotes and Desired State

Student Quotes [EAB Focus Group](#)

- *I wish there was an app for MaineStreet the web browsers on phones can be difficult to navigate.*
- *I am looking for something that has everything in one place.*
- *MaineStreet is a pain, I loathe it, hardly ever log in.*
- *The one question I deal with the most (as a peer advisor) is students who aren’t sure where to look for the resources they need. They don’t know the process or who to talk to or where to start.*

- *There is a large disconnect between online learners and on-campus students; a lack of community when taking classes online.*
- *I sometimes avoid larger emails if they are from UMA and not UC-Rockland because that information is never relevant to me.*
- *I forget that we are part of UMA.*
- *I don't know who my advisor is – a lot of students are not sure of who they should be contacting for advising.*
- *The lack of consistency can be confusing for students (Blackboard use).*
- *Response time matters.*

What our students want:

Improved navigation	Clear contact person(s)/advisor
One stop view (dashboard)	Community for online learners
Mobile access	Live chat/help options
Task Reminders	Consistent Class Experience (Blackboard)
One stop service	

Campus technology is also important to prospective students. When Wakefield Research surveyed [1000 college students](#) in October 2017, 87% of them said the technological savvy of a school was an important factor in determining where to apply. [EDUCAUSE](#)

BestColleges.com, in their 2017 Online Education Trends Report, states that the top challenges students face when making decisions about an online university or program include “finding sufficient information about academic requirements” (#3) and “contacting a real person to ask detailed questions about specific programs” (#4). Prospective distance students want help assessing program fit and with navigating the application and enrollment processes. [Evolution](#)

Committee Work – Review of Best Practices

Committee members gleaned best practices through review of web sites and portals (higher education and other), interviews with leaders in online education and technical experts, review of articles, participation in webinars, and vendor demonstrations. References are included in the appendix section.

What we learned:

- Information should be user centered (shaped to fit how the user is going to use it). [Pan](#)
- Task-based navigation generally works better by providing direct access to the actions and quick feedback on the completions of tasks. [Pan](#)
- Mobile devices play an increasingly important role.
- Fast response times help online students feel recognized and supported.
- Online engagement experiences designed from the ground up as online experiences (distinct from making existing experiences accessible to online via tape delay, streaming, etc.) are most effective. [Fifer; Iaquinta & Fifer](#)
- Campus swag, virtual club membership, and alumni communities are strong strategies to create connection with online students. [Fifer; Iaquinta & Fifer](#)
- Staff positions dedicated to online student support, service and engagement are important. [Fifer; Iaquinta & Fifer](#)

- A technologically unified campus consolidates siloed data, departments, and systems to create a “one-stop shop” solution designed to make engagement easier among faculty, staff, and students. [Salesforce](#)
- Well-designed nudge strategies work. [EAB: Fifer; Salesforce](#)
- Aligning and embedding support services in the classroom increases usage. [Betts, Parker & Porch](#)

Desired State

UMA’s cyberspace presence is an environment where UMA students readily understand their academic standing including things such as registration status, financial aid, course deadlines, academic support services, real time assignment grading, and progress towards degree completion. They easily access information, communicate with faculty and staff, and conduct transactions using the device(s) of their choice. It is a space that strengthens a student’s sense of belonging and promotes student engagement in this community. As guiding principles, UMA’s cyberspace is student-centered, intentional and interactive.

To achieve the desired state, make improvements in the opportunity areas of Navigation, Access, Service and Engagement.

Opportunity Area: Navigation

The cyberspace navigation system plays a crucial role in how well users are able to access information and accomplish tasks using the internet site.

Current state. UMA’s website is our intended external facing space for visitors and prospective students, and the portal is the intended access point for internal users. Actual practice indicates that students and employees enter UMA’s cyberspace through both the web page and the portal and many enter the LMS and SIS directly through saved links. UMA is rich with tools, the typical student or employee portal launchpad includes links to 15-20 tools; however, these tools often feel siloed from one another and users are not always clear about what each tool does and when to use it. Users indicate that not all tools work equally well with all browsers and many perform poorly on mobile devices. UMA’s web and portal structures tend to align with our organization structure and while there is some internal convenience to this approach, students do not typically know the nuances of office divisions and specific employee responsibilities.

Ideal state. Students are able to quickly locate information, perform actions and browse the site - receiving help as needed.

NAVIGATION RECOMMENDATION 1. ESTABLISH THE PORTAL AS THE CLEAR FRONT DOOR FOR DIGITAL SERVICES AND SUPPORT. SET UP CLEAR ADMINISTRATIVE ASSIGNMENT AND RESOURCING OF PORTAL DUTIES.

Individual departments are responsible for their portal presence, but most staff do not understand the portal’s features and many departments do not have individual(s) clearly tasked and trained to handle this responsibility. Form a team of in-house experts by sending a team of communications and student services staff to vendor training. These individuals will learn how to fully utilize our portal attributes and serve as in-house trainers to other departments.

NAVIGATION RECOMMENDATION 2. ADOPT TASK-BASED NAVIGATION FOR THE PORTAL AND WEB.
INTEGRATE & UNIFY TECHNOLOGY THROUGH EFFECTIVE NAVIGATION

Task-based navigation is user-centered and flows from what the user wants to accomplish. A well-designed navigation makes finding information easy, ensures the user’s work process runs smoothly and encourages the user to explore. It is practically invisible because users can navigate so naturally that they do not feel its existence. Pan

One approach to task-based navigation is a dashboard. The dashboard provides forward facing services and data sources to our community at a glance. The service would be modular and simple in design to provide maximum use and cross publishing of status/data info to multiple sources (i.e Mobile apps, web sites etc.)

- Peer Dashboard Example- <http://www.hawaii.edu/its/>

The navigation should integrate our technology systems and processes to support a unified method of tracking and monitoring students’ progress. UMA may employ internal resources for this task or it may be beneficial to jumpstart the process by hiring an information architect. Just as the UMS hired architects to design the Master Facilities Plans of each institution, an information architect would bring the principles of excellent design and architecture to the UMA/UMS digital landscape. A good information architecture is the basis of providing good usability and findability.

Opportunity Area: Mobile Access

Students view “Laptops as Kings, and Smartphones as Queens” in their academic lives, and favor a hybrid/blended mode of instruction. NOVA Nationally, and at UMA, students are using their mobile devices to access their education and related support services.

Below are some device ownership trends identified in a 2015 Educause report.

Fig 1. - Student Device Ownership

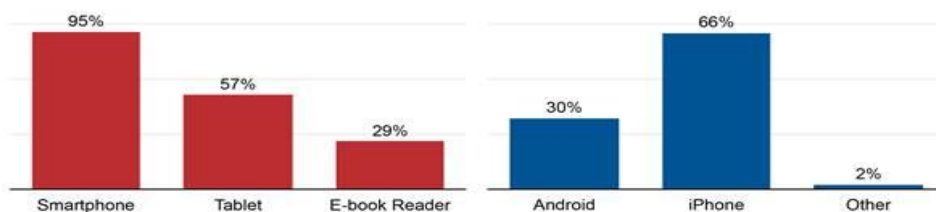


Figure 1. Device ownership

Figure 2. Smartphone ownership

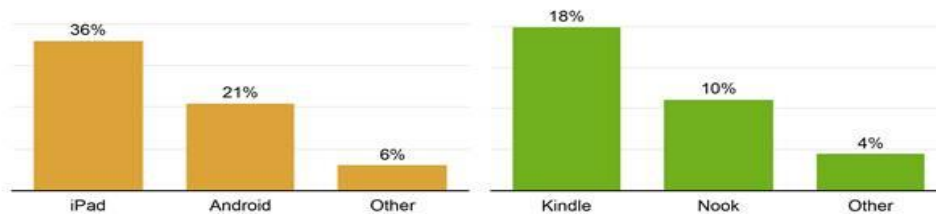


Figure 3. Tablet ownership

Figure 4. E-book reader ownership

Current State. UMA's portal, LMS and SIS are not mobile friendly. UMA does not have a mobile app. The user's browser selection affects the performance of some modules within UMA's site.

Ideal state. UMA is a mobile-friendly campus. Students may access UMA's cyberspace with their device of choice. All students have access to a quality device.

ACCESS RECOMMENDATION 1. INVEST IN MOBILE ACCESS TO UMA SIS, LMS AND PORTAL
UMA needs to be available in the mobile spaces our students occupy. Work with UMS IT to improve mobile friendly access to all UMS digital tools and platforms. Provide prospective students with clear guidance about the technology required to access UMA's digital classes and services.

ACCESS RECOMMENDATION 2. CREATE A UMA APP

Build an app ecosystem using Mobile Device Management (MDM) solutions that can also map the waypoints of access to important services and virtual spaces (e.g. forums, event calendars, student resources, student support, etc.). UMA is adopting the Education Advisory Board's Guide product as its initial app tool. Advocate to UMS-IT for full adoption of this tool. Advance UMA use through marketing and clear expectations for departmental participation.

ACCESS RECOMMENDATION 3. PURSUE PARTNERSHIPS TO PROVIDE MOBILE DEVICES TO STUDENTS
National trends in smartphone usage amongst adults point towards universal access to the platform. However, given socio-economic considerations of Maine, access to these devices and more importantly, to unlimited data plans are significant barriers to students and adoption of new pedagogical practices by faculty. Explore potential corporate partners for device subsidizing & development support (i.e, Apple, Google, LinkedIn, Facebook, Uber, AirBnB, Cell Providers)
UMA supplied devices will be preconfigured with apps and mapping to internet based services and spaces.

Opportunity Area: Service

Adult learners expect that if it is an online program, it is 100% online including easy access to support and services. Students expect one-stop shopping and quick resolution of their questions. Well designed technology cultivates relationships between student, faculty and staff.

Current State. A review of UMA services (Appendix II) shows that all units provide information on the web page and in the portal. Self-service options exist in MaineStreet for tasks such as registration and payment of bills. Many forms are available to download and some options are available to submit forms directly online. Contact information is provided including names, emails and telephone numbers. Staff are typically available from 8:00 AM-5:00 PM EST, Monday-Friday. The library offers evening and weekend hours and staffs an online chat available during most open hours. Students may opt in for text messages for the Emergency Alerts and from the MaineStreet Message Center. Web and portal information is organized by broad organization categories such as Academics, Financial Services and Student Life. Individual departments/offices maintain their specific pages.

Ideal State. Students easily access online information and conduct transactions 24/7. Live chat/help desk options are available during specified periods. Students receive nudge notifications to remind them to complete tasks and guide them to relevant services. Staff recognize the importance of quick response times to avoid the impression of neglect.

SERVICE RECOMMENDATION 1. INTRODUCE ON DEMAND STUDENT CONCIERGE SERVICE VIA FULL PRESENCE CAPABLE TECHNOLOGIES

Staff chat/help desk with generalists/student worker peer groups dedicated to the provision of online first services. Investigate and adopt call center support software solutions. Support front-line staff with access to specialists to address questions that are more complicated.

The re-emergence of UMA may provide opportunities to look at direct service providers to provide pool of concierge staff (time freed up through investment in marketing, recruiting, etc.)

SERVICE RECOMMENDATION 2. PILOT DYNAMIC Q & A TOOL

Dynamic Q & A tools allow users to find the information they are looking for by simply asking a question such as, “How do I get a transcript?” or “When can I register for summer classes?” UMA’s online new student orientation has invited UMA to pilot a dynamic Q & A tool. We recommend participating in the pilot.

SERVICE RECOMMENDATION 3. IMPROVE CUSTOMER SERVICE WITH PROTOCOLS FOR WARM HAND-OFFS AND TRANSPARENCY WITH PREDICTED RESPONSE TIMES

Students sometimes feel frustration when transferred from office to office to only leave a voice message or by sending email inquiries and not receiving a same day response. Establish institution-wide expectations for reduced hand-offs and appropriate response times. Support this effort with training.

SERVICE RECOMMENDATION 4. EXPAND EMBEDDED SERVICES & INFORMATION IN CLASSES

The majority of time spent by students at UMA is in the classroom, which for online learners means the LMS. Therefore, connecting students to services and policies through the class structure helps students to access the support and information needed when needed. UMA currently embeds tutors, class stewards, librarians and writing assistants in select courses.

Expand this strategy by:

- Adding the above services to additional courses
- Embed additional services such as career services, VAWLT, Distance Librarian, tutoring etc in appropriate courses
- Adopt course design that connects students to university policies and support services
- Develop tools and work processes that allow advisors to easily see the online engagement of assigned students within classes (time in blackboard, videos watched, assignments turned in, exams taken. The expectation would be that these professional advisors are regularly (weekly) engaging these students and intervening with student who are off track at the earliest possible moment.

This report is focused on delivery of services; however, this effort must be connected to a complementary process to improve the delivery of class content. Students report the quality

across online classes is uneven and also express a strong desire for greater uniformity in course design. [Focus groups](#)

SERVICE RECOMMENDATION 5. IMPROVE REGISTRATION INFORMATION & PROCEDURES

Students and employees identified several strategies to improve the course search and registration process.

- Develop forward facing online catalogs of courses that can be registered for online by non degree/ non-credit students;
- Enable non-degree course registration as a public facing web service;
- Ensure courses can be sorted and marketed by programmatic categories;
- Update MaineStreet Class Search to include classroom software and hardware requirements as course attributes;
- Develop “welcome” pages for each class that includes teacher bio, course intro videos, syllabi, required course technology, career related skills gained, teaching philosophy;
- Adopt UMS common, easy-to-understand definitions for course modalities.

SERVICE RECOMMENDATION 6. EXPLORE NAVIGATOR/COACH MODEL

Many institutions serving online students have adopted a success coach or navigator model for student support and advising. Coaches connect with students from the moment they are admitted, guide them through the on-boarding process and provide on-going check-ins and service. This single point of contact approach creates a positive connection. This model represents an on-boarding and advising redesign, not technology deployment, but as a noted best practice for serving online and non-traditional students, we recommend continued exploration.

Engagement

Students want to have a connection to faculty, advising and others who share their experience as students. Even students juggling family and work responsibilities want to be involved and recognized for their student role. They appreciate the opportunity to tell their story. Online learning can make connecting more challenging. It also has the potential to increase Transactional Distance a concept coined by M. G. Moore (1973) to articulate the space felt between instructors and students. While any student may experience transactional distance, online learners can more often feel isolated from their university, and may unintentionally be excluded from the university culture. [Major & Sumner](#)

Current State. UMA has no dedicated staff positions or resources for online engagement activities. UMA’s current approach to online engagement is to take campus/center based activities and make them accessible to online students via mechanisms such as delayed view or synchronous involvement via telephone or conferencing. The phenomenon of transactional distance was evident in the UMA student quote, “I forget that we are part of UMA.”

Ideal State. Online students have a dedicated digital space to connect with faculty, staff and each other. They have opportunities for recognition and participation in activities, organizations and events. UMA online learners are an active part of the UMA community complete with a sense of belonging.

ENGAGEMENT RECOMMENDATION 1. HIRE/CARVE OUT DEDICATED STAFF/STAFF TIME TO BUILD ONLINE ENGAGEMENT ACTIVITIES

Coordinator/Director of Online Engagement positions are emerging at best practice online colleges. Our instructional designers teach us the art and science behind courses designed specifically for online delivery. The same principles hold true for online engagement activities. UMA needs to invest in the delivery of engagement experiences specifically designed for our online learners. Hiring a Coordinator of Online Engagement will begin to fill this void.

ENGAGEMENT RECOMMENDATION 2. CREATE SPECIFIC SPACE(S) FOR ONLINE ENGAGEMENT
Create a private online community just for online students. Explore options within existing platforms such as Liferay and Blackboard. Establish guidelines and create an educational culture more focused on academics than mainstream social media.

ENGAGEMENT RECOMMENDATION 3. GAMIFY AND INCENTIVIZE PARTICIPATION

Digital badges, coins and UMA imprinted swag all encourage participation and create connection to the institution. Develop a strategy to include both quick contests & giveaways as well as opportunities to earn more meaningful badges based on significant investment in learning.

- Work with UMS IT to move forward with an enterprise solution for digital badging.
- Make photo student IDs available to online students. This demonstrates campus membership and allows students receive discounts at participating local vendors.

ENGAGEMENT RECOMMENDATION 4. ESTABLISH ONLINE CLUBS/STUDENT ORGANIZATIONS

Create online student clubs and organizations. Honor societies with message boards and virtual meetings to build student connections and spur academic interests are popular at other institutions.

ENGAGEMENT RECOMMENDATION 5. PROVIDE FACULTY, STAFF & STUDENTS WITH ACCESS AND TRAINING TO SOFTWARE AND TOOLS TO SUPPORT AND ENCOURAGE DEVELOPMENT OF ONLINE ENGAGEMENT SPACES AND ACTIVITIES.

- Partner with other campuses to initiate a system-wide project intake form (PIF) for the UMS licensing of Adobe Creative Cloud to all Faculty, Staff, and Students. Adobe Creative Cloud is a set of software used for graphic design, video editing, web development, photography, along with a collection of mobile applications and also some optional cloud services.
- Explore the creation of "maker spaces" at all UMA locations to provide student & community access to 21st century tools and resources that are partnered with new academic programming for these emerging resources.

Universal access to these tools will help all members of the community contribute to a dynamic UMA cyberspace.

ENGAGEMENT RECOMMENDATION 6. REGIONAL LOCATION ENGAGEMENT

Work with alumni, career services and athletics to create off-campus opportunities for students to meet.

ENGAGEMENT RECOMMENDATION 7. INCREASE ASYNCHRONOUS AND HYBRID OPTIONS

Continue to create videos of workshops, including shorter YouTube “how-to” videos and tips. Use conferencing and live streaming to bring online and campus/center based students together for events and club meetings.

Conclusion and an Eye to the Future

UMA’s cyberspace presence shapes the experience of our online students. Done well, it creates an environment where students always know exactly where they are in their educational journey and are readily able to complete the tasks they need to complete. Students feel connected to UMA and engage as learning partners with their faculty and peers. The recommendations in this plan provide steps to improve our immediate cyberspace.

FINAL RECOMMENDATION. CREATE A GROUP TO MONITOR THE IMPLEMENTATION OF THIS PLAN AND TO MAKE PROVISIONS FOR CONTINUOUS IMPROVEMENT.

We propose that the charge of the ongoing group be expanded to provide for alignment between academics and services. The suggested charge: provide all students, faculty and staff with digital pathways to services, learning and support.

It is also important that UMA’s cyberspace continue to evolve. This report concludes by introducing two innovative possible next futures for UMA’s cyberspace: Virtual Reality (VR) Campus and Augmented Reality (AR) Campus. Virtual spaces can be representative of physical campus spaces to build a sense of place(s) that maps to campuses and centers, and can be unique to the virtual campus to foster and recognize the uniqueness of the experience.

Mobile VR hardware is available and consumers are adopting these products. Northern Arizona University launched a virtual 360-degree campus tour and had more than 30,000 visitors in the first two years. University Business Institutions of higher education are using VR and AR in all aspects of university life from student recruitment to academic enhancements and even capital improvement. [Fink](#)

About Virtual Campus

An accurate, complete 3d model of the campus is required to provide a platform for virtualized services and experiences. It will be necessary to modify facilities practices to ensure such a resource is kept up to date via multiple entities (i.e Bids for new construction etc.)

Determine Feasibility

- Create Precise 3D model of campus
- Load onto google earth/maps
- Design interactions and way points that could include chat, video calls, phone calls, and discussion boards, etc.
- This could be a creative communication space using digital billboards, announcements and public forums, etc.



About AR Campus

Augmented Reality is the super-imposing of digital information over real environments. The popular game Pokemon Go is an example of AR. The possibilities for location based services and AR development to transform education are just beginning to emerge. In order to realize AR's maximum effectiveness, virtual models must be available for reference in creating an AR environment.

Determine Feasibility

- Review ongoing research & solutions around UMS and develop UMA solutions as needed
 - <https://umaine.edu/imre/handwaver/>
 - <https://umaine.edu/vemi/>
- Use location service on mobile platforms and virtual campus to create augmented education/ community experiences and services
- Mobile app solutions are already emerging for AR development and use cases

VR/AR are expensive to implement. Early adopter institutions recommend starting with low cost tools such as Google Cardboard to test the waters. As interest and excitement grow, invest in true VR headsets. Students who have learned to use VR/AR tools independently can be an excellent resource to provide tech support to other students and faculty. **EAB** Becoming an early adopter of AR and VR will help to position UMA as an innovative and engaging institution.

Appendix I: References and Resources

Best Colleges. "2017-Online Education Trends Report." *Best Colleges*, 2017, www.bestcolleges.com/wp-content/uploads/2017-Online-Education-Trends-Report.pdf Accessed Feb. 2018.

Betts, Kristen: Drexel University, Parker, Mark: Norwich University, Porch, Tom: University of Maryland University College and Seigle Peatman, Sarah: Academic Impressions. "Retaining Online Students: 3 Expert Perspectives." *Academic Impressions*, 28 March 2017, www.academicimpressions.com/retaining-online-students-3-expert-perspectives/ Accessed Feb. 2018.

Chatlani, S. "Are Mobile apps a key to online student retention success?" *EducationDive*, 29 January 2018, www.educationdive.com/news/are-mobile-apps-a-key-to-online-student-retention-success/515141/ Accessed March 2018.

Chen, B., Seilhamer, R., Bennett, L., Bauer, S. "Students' mobile learning practices in higher education: A multi-year study." *Educause Review*, 22 June 2015, er.educause.edu:443/articles/2015/6/students-mobile-learning-practices-in-higher-education-a-multiyear-studyh Accessed March 2018.

Education Advisory Board. Student Focus Group. University of Maine System, 15 Feb. 2018.

Fifer, Tiffany, Director of Online Engagement at Southern New Hampshire University. Personal Interview, 16 Feb. 2018. Interviewed by Nickerson, Hafford & Fraser.

Fink, Jennifer. "Virtual reality, real rewards in higher ed." *University Business*, 25 August, 2017, www.universitybusiness.com/article/virtual-reality-real-rewards-higher-ed Accessed Feb. 2018.

Iaquinta, H and Fifer, T. "Building an Engaging Online Students' Union." *Changesu*, 7 May 2016, www.changesu.org/?p=598 Accessed Feb. 2018.

Major, Amanda and Sumner, Jennifer. "Reducing Transactional Distance: Engaging Online Students in Higher Education." *Evolution*, 1 March 2018, evolution.com/revenue-streams/distance_online_learning/reducing-transactional-distance-engaging-online-students-inhigher-education Accessed March 2018.

NOVA. "Engaging Online Learners for Success-Beyond the LMS." *Educause*. Northern Virginia Community College, 2012,

drive.google.com/file/d/0B9_mlymohalOaF9ueWZOLXZ5NkFnNUF3NFlxWmxGZ3BxVFQ4/view?usp=sharing_eil&ts=5ac79d02 Accessed Feb. 2018.

Pan, Pan. *Redesigning website navigation from content-based to task-based: a case study for Nuage website*. MS Thesis. University of Tampere School of Information Sciences, 2015, tampub.uta.fi/bitstream/handle/10024/98464/GRADU-1453719591.pdf?sequence=1 Accessed 17 Feb. 2018.

Tyger, Daniel and Hook, Frear. Personal Interview. 23 Feb. 2018. Interviewed by Hafford & Fraser.

University Services. "Information Technology State of IT Report – 2017." University of Maine System, 1 Jan. 2018, thinkmissionexcellence.maine.edu/wp-content/uploads/sites/1/2018/02/SoIT-Final-2018-01-31.pdf

YouVisit LLC. "Engage and Convert Your Audience with Interactive Virtual Experiences" *YouVisit: Beyond Boundaries*, 2010, www.youvisit.com Accessed February 2018.

See also college.harvard.edu/admissions/visit/virtual-tour YouVisit for Harvard University.

Samples of 360 Classrooms

www.youtube.com/watch?v=QqO0ZIGTHPs
www.youtube.com/watch?v=dTY7dJ5D_z4
www.youtube.com/watch?v=nMIhRyMm7xE
youtu.be/mlOiXMvMaZo?t=1m9s