University of Missouri
Nexus@Mizzou Whitepaper

An assessment on the one-year anniversary of the launch of the platform

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History and goals of the program

The Nexus@Mizzou program was conceived in 2015. Primary considerations were enabling the introduction of online e-commerce capabilities, providing a single portal for Missourians to discover all Extension offerings and simplifying the cost and ease of systems maintenance. Recognizing the depth and breadth of program offerings that Extension has in place, finding a one-size fits all set of applications was neither possible nor desirable. Instead, the program management team followed a goal of deploying a platform that meets the 80% - 20% rule, where 80% of Extension’s requirements could be met via commercial off-the-shelf (COTS) software with little to no customization while also having systems that are flexible enough to be able to accommodate other MU campus units or UM System universities. This enables cost sharing among all user groups, lowering costs for Extension while making state of the art systems available to all UM groups.

At the highest level, there were five pillars to be delivered by the program as shown below.

Historically, MU Extension program leaders have sought independent means to make their services and offerings available to the general public. This had much to do with funding sources, resource availability and tools available to the various program leaders. Even when some groups were using a centrally managed platform, the customer journey was customized to each program’s perception of how best to offer navigation and presentation strategies to their client base. This caused a disjointed customer experience while also presenting programs in silos. This silo strategy also masked the total cost of ownership that the organization was spending on system and hardware maintenance, upkeep and enhancement activity.

During the analysis phase of the Nexus@Mizzou program, MU Extension program leaders consistently stated that their offerings were the only thing of interest to their customer base. During the one-year anniversary feedback sessions, discussed below, some of these same program leaders continued to state...
this with certitude. This is contrary to information received during end user customer feedback sessions facilitated in 2017. Missourians clearly articulated their desire to have a single place to find all Extension programming organized, at the highest level, into four topic areas: Agriculture and environment, Business and community, Health and safety and Youth and family.

Nexus was created to be flexible enough to bring all programs together in a common platform, break down silos and think of the end user customer experience first and foremost. Although the systems are meant to promote faculty, staff and programming, Nexus treats all programs equally while using current industry best practices to visualize and monetize educational products.

Systems in the Nexus@Mizzou suite

The following systems are a part of the Nexus@Mizzou platform.

- **Magento** is the customer portal through which all programming, publications, online and face-to-face learning is offered. Magento is the e-commerce system that powers eBay. Magento was spun off from eBay as a publicly traded company and currently holds approximately 37 percent market share of all e-commerce websites worldwide. Magento was recently purchased by Adobe Incorporated.

Magento was selected as the primary customer interface for Nexus@Mizzou because it offers a visually focused platform using facets to organize information into intuitive categories. The assumption made by the Nexus program leadership is that anyone who has used eBay or Amazon to make online purchases will find the MU Extension site intuitive to learn and easy to navigate because it is so similar to these commonly used websites.

By having Magento interfaced to all of the other systems in the suite, customers can navigate amongst the systems seamlessly, not having to remember separate passwords for each. Most importantly, because these software packages are COTS products, as the marketplace causes each vendor to enhance their tool’s capabilities or add features, MU receives these automatically, without additional cost or the need for custom code introduction.

**Hawksearch** is the search, artificial intelligence and automation engine used in Nexus@Mizzou. Hawksearch offers customers popular searches and top five matches when using the search bar. It learns as customers use the platform and modifies its algorithms to refine the information that is presented to Missourians. And it enables personalization of web content presentation when users identify areas of interest in their profiles.

**Dotdigital** is an online marketing tool that allows users to customize email messages to targeted audiences...
based on their past interactions with MU Extension programs and content. As program areas migrate to the Nexus platform, designated users are being trained how to use this marketing tool. These program-area users will be responsible for creating content, managing their own email campaigns and analyzing the reporting statistics.

**Canvas** is an easy to use and intuitive Learning Management System (LMS) for Extension faculty and specialists. Since its launch in January 2018, the number of online courses has more than doubled, with 96 MU Extension courses now completed and another 33 in development. Nursing Outreach, FRTI, LETI and various other program units, as well as some UM System partners, have been early adopters.

**Cvent** is the new specialized event registration system that is available to MU Extension programs and administrators. Cvent provides streamlined, centralized services with a clear fee structure available through the MU Conference Office. This event registration tool for face-to-face programming, events and conferences provides online registration for any type and size event, as well as access to attendance rosters and, when applicable, revenue reports. Collaborating with the MU Conference Office will allow faculty and staff to focus on program development and event content, while allowing conference center experts to focus on quality delivery of registration and event logistics.

**Office Depot** enables on-demand printing which caters to our ever-changing world. Providing our readers with up-to-date information is essential to meeting MU Extension’s mission, and we need to deliver in a professional yet cost-effective manner. Our partnership with Office Depot enables MU Extension to do just that by introducing a new model for servicing printing/promotional products and apparel requirements and by replacing the MU Extension publications warehouse with a print-on-demand fulfillment model.

**Current state**

The Nexus@Mizzou platform went live on December 12, 2017. The initial launch provided minimally viable product (MVP). MVP means that the five primary systems listed above were integrated together, credit card transactions posted in PeopleSoft and a volunteer group of continuing education units and programs were migrated onto the platform. In addition, a new Extension homepage design was launched and the platform has a fully responsive design for mobile devices.

MVP is a strategy that is used by many of today’s most successful online businesses. It employs a strategy of making a capability or features available to the public, monitoring usage and, if needed, making rapid adjustments to how the system works. In some instances, if there is low acceptance of a feature, it is turned off. This is known as “fail fast”. Over the course of 2018, there were over 150 modifications to functionality based on this best practice. This is in addition to new major capabilities that were introduced throughout the year.

As of March 1, 2019, significant progress has been made in consolidating websites and adding major functionality into the platform. The team is working to consolidate all program pages by summer 2019. Diagrams 1 and 2 on page 4 provide further information on capabilities introduced since launch.
Public/Customer Usability Feedback and Improvements

Ninety days after launch, the MU Allen Institute was contracted to conduct user experience testing on the Nexus@Mizzou platform. A small group of Missourians was recruited statewide to complete a series of tests on the platform. Users ranged from 22 – 60 years of age, self-identifying themselves as novice to expert level when using technology. In addition, a small percent had visited the MU Extension website in the past; most had never been to the website.

Users conducted a series of ten (10) tests associated to specific tasks such as registering for an online course or purchasing a physical product. Based on the user’s experience, feedback was provided on platform usability and learnability. Usability refers to the quality of the user’s experience when interacting with a system or product. Learnability refers to the system’s quality that allows the user to quickly become familiar with the system and its capabilities.

On a scale of 1 to 100, where 1 is highly negative and 100 is highly positive, these test subjects rated the Nexus@Mizzou platform usability at 69.2, above average, and learnability 83.9, a high score. Considering the nascent state that the platform was in at that time, and the variance of technical skills and familiarity with Extension that testers admitted, these scores are very positive while indicating an opportunity for improvement. A number of recommendations for user experience improvements were presented by Allen Institute researchers, many of which have been incorporated into the user experience.

Additionally, the Nexus@Mizzou help desk receives emails and tickets from Missourians, faculty and staff regularly. When working with an end user directly, staff is trained to document points of confusion and work with peers or management to modify online content for clarity or open an enhancement request to improve usability. Management reviews all tickets bi-monthly to ensure that feedback is rapidly acted upon.

When all Extension related programs have been migrated onto the platform, the Allen Institute will be contracted to conduct a much more detailed round of testing with Missourians and stakeholders. Specific user groups that represent the personas of customers that routinely use the Extension website will be solicited to conduct searches for content, register for courses and events while navigating from program to program. Personas will include agricultural producers, consumers, business community and economic development professionals, continuing education seekers and Extension professionals.

Faculty/Staff Usability Feedback and Improvements

After platform launch, Nexus leadership made a concerted effort to present system capabilities to the majority of the stakeholder groups on campus while traveling to regional and county council meetings whenever invited. These served as an excellent forum to gain feedback from an internal audience who, typically, share frank and honest opinions. Through demonstration, faculty and staff became familiar with how the system works and this informed their feedback. Throughout the year, any issues or enhancements identified through these forums was captured and brought back to the team for analysis and, where needed, capability enhancement.

On December 11, 2018, leaders of the Law Enforcement Training Institute (LETI), Missouri Training Institute (MTI) and Nursing Outreach (MUNO), representing the continuing education (CE) unit early adopters, met with Nexus@Mizzou, MU Conference Office and Americaneagle.com staff to provide general feedback about their customers’ experience. A separate open session made available to all employees statewide was facilitated that same day. Feedback from the early adopters could be categorized into four areas:
Platform usability was termed in need of improvement.

Customers struggle to stay within a program’s specific set of offerings, instead they frequently select an icon that leads them to Extension-wide offerings. This caused customer confusion and frustration.

Users indicated difficulty finding specific content using the in-site search tool or that it was presenting unrelated or incorrect information.

General improvements that would benefit all users across all programs.

Out of this session, there were twelve platform improvements identified. These range from simple to a high level of complexity. It is the intention of the Nexus@Mizzou team to implement change to positively affect each of these recommendations. Simple fixes are already in place, the timing of more complex updates is the only thing that cannot be perfectly communicated at this time.

To address difficulty finding specific content using the Hawksearch tool, there was a review of all of the examples provided during the meeting. There was an admission that, for a period of time, a software issue caused search prioritization issues. The root cause was identified and resolved earlier in the year. Demonstration of the specific examples in question showed that unanticipated search results for specific keywords or phrases were justified as relevant based on the content on the resulting page. Further, unanticipated results were listed after pages which contained more relevant content. This validated that Hawksearch was functioning as intended and offering content in a logical prioritized order.

The statewide open feedback session had approximately 25 participants in total. The session was a combination of questions on how the platform works along with suggestions for change. Many of the change requests were already developed and scheduled for deployment or planned enhancements on the product roadmap for 2019. Where new requirements were elicited, these were added to the product backlog for prioritization and deployment in 2019.

Final comments

By launching with MVP, MU Extension was able to bring the Nexus@Mizzou platform to market in a shortened timeframe, enabled the training of the support teams while failing fast when capabilities experienced poor adoption rates. The one-year anniversary of the launch of the platform was an optimal time to visit with early adopters and employees statewide to pursue feedback and identify future improvements. A similar feedback loop will be conducted with Ag, BDP and HES groups a year after all of the Extension program websites have been consolidated onto Nexus.

The introduction of a program as complex as Nexus@Mizzou necessitated dramatic change. Similar programs always mandate a review of people, processes and tools. From the introduction of total cost of ownership (TCO) pricing, see Appendix A for more information on TCO, to where work gets done, this program has transformed the Extension enterprise. These changes have been hard, and not always gone as smoothly as hoped for, but MU Extension is entering 2019 as a recognized industry thought leader in the use of technology, a first. The Nexus@Mizzou platform is being showcased at three national conferences in 2019.

Adoption by MU campus groups has also begun. MOREnet, a provider of K-12 technology services statewide, is currently building a new storefront to upgrade and modernize their web presence and service offerings. They plan to launch on Nexus in May 2019. And more than a dozen departments on the MU campus have adopted dotdigital and/or Canvas.
Once again, the Nexus leadership team would like to thank the early adopters for being willing to help launch the platform and test capabilities. Although it was a given that things would not be perfect – and no systems are – early adopter feedback has helped to positively modify the platform for Missourians and all Extension groups that followed afterward.

Finally, it is hoped that by sharing the above information, faculty and staff will have confidence that the Nexus team has gone to great lengths to elicit feedback and act on this information. When the program was started, technology was an inhibitor to delivering programming to audiences in a format and at a time that is most convenient for the customer. Based on the current state, Nexus gives MU program leaders a number of options to increase program reach.

The operations team is committed to constantly improving the Nexus@Mizzou platform for Missourians, faculty and staff. Faculty and staff are encouraged to send feedback on issues or enhancement requests to the Nexus@Missouri.edu email box.

Thank you again to all for your input.

Kyle Flinn

Director, Enterprise Program Management
Appendix A

Total Cost of Ownership

The genesis of this paper was the closure of the MU Extension publications warehouse. Historically, the cost of warehouse facilities, labor and shipping were not allocated back to the business unit or office that ordered publications, logo items or other materials. In addition, during the creation phase of guides, peer reviewed publications and curriculum, ancillary fees have not been accounted for in the pricing or fees charged to end users. Without including labor, shipping, research and development and future update costs into a manuscript, pricing becomes artificially low.

Total cost of ownership (TCO) is an analysis that places a single value on the complete lifecycle of a product purchase. This value includes every phase of ownership: acquisition, operation, and the softer costs of change management that flows down from acquisition such as documentation, training, research and development, future updates, etc.

How does Total Cost compare to Price?

Total cost of ownership (TCO) highlights the difference between purchase price and long-term cost. There are a number of different ways this analysis is useful to decision makers. Total cost of ownership (TCO)
analysis can help make critical decisions on the viability of a curriculum or offering. Without including all cost components for the entire lifecycle of a product, pricing will be set inappropriately and adequate cash flow will not be realized. By incorporating TCO into the upfront analysis process, it directly impacts outcomes in product design, prioritization of program funding, and overall department budgeting.

The Basics

A cost-benefit analysis finds, quantifies, and adds all the positive factors involved in a proposed course of action. These are the benefits.

Then all the negatives, or costs, are identified, quantified, and subtracted.

The difference between the two indicates whether the planned action is advisable. The real trick to doing a cost-benefit analysis well is making sure you include all the costs and benefits and properly quantify them.

What is included in TCO Analysis?

There are three key components to TCO calculations:

1. Acquisition Costs
2. Operating Costs
3. Personnel Costs

Acquisition Costs

Acquisition costs include the cost of materials (printing or sourcing costs), discounts and purchasing incentives. Discounts and purchasing incentives for printed materials are typically driven by volume or the combination of jobs to more efficiently group print runs to reach volume discount levels.

Operating Costs

Operating costs include storage, postage, research and development hours to keep current and updating or revision services by internal or outside editors needed to maintain the item for use. This category also includes utility costs, direct operator labor, and initial training costs.

Personnel Costs

Personnel overhead may include administrative staffing, support personnel, faculty and systems staffing to make the product available online. This may include ongoing training based on research and development discovery. Personnel costs always include benefits in the loaded labor rate used in calculations.

Real total cost of ownership (TCO) analysis is a critical tool in the decision-making toolbox for any organization. It requires both an understanding of the investment considered, the potential audience for a product and the potential business and audience impact in the marketplace.
Example 1 below demonstrates the total cost of ownership when all cost components are included in pricing analysis. Pricing should be established at a minimum of $35 per publication for online purchases because of the mandatory 3% credit card merchant fees that must be paid on every transaction.

Example 1

<table>
<thead>
<tr>
<th>Publication 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantity</strong></td>
</tr>
<tr>
<td><strong>Costs</strong></td>
</tr>
<tr>
<td><strong>Assumptions</strong></td>
</tr>
<tr>
<td>Print cost @ quantity 100</td>
</tr>
<tr>
<td>Storage</td>
</tr>
<tr>
<td>FTE labor &amp; handling</td>
</tr>
<tr>
<td>Shipping</td>
</tr>
<tr>
<td>Cost of boxes/shipping materials</td>
</tr>
<tr>
<td>Research and development</td>
</tr>
<tr>
<td>Outside labor to update/edit/revise</td>
</tr>
<tr>
<td><strong>Total</strong></td>
</tr>
<tr>
<td><strong>Total Cost / Number of Publications</strong></td>
</tr>
</tbody>
</table>

Some of this information was adapted from the online articles below: