

**Arizona State University
Continuity of Operations
Audit Report
February 2, 2018**

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Arizona State University
Continuity of Operations Audit
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Summary: The Continuity of Operations audit was included in the Arizona State University (ASU) FY2018 audit plan approved by the Arizona Board of Regents (ABOR) Audit Committee and ASU senior leadership. The audit focused on the design and effectiveness of ASU's Continuity of Operations Plan to ensure that ASU's personnel and assets are protected and able to function in the event of a disaster. This audit is in support of ASU's mission to demonstrate excellence, access and impact.

Background: Continuity Planning is the creation of a strategy to address threats and risks to ensure personnel and assets are protected and able to function when confronted with interruptions such as natural disasters, technology failures or threats, human errors, terrorism or maintenance failures. It involves the prioritization of functions and critical operations that are essential for recovery and focuses on eliminating or reducing the impact of the interruption to acceptable levels. For ASU, critical processes span categories including safety, business support, auxiliary functions, instruction and research.

ASU implemented a robust Emergency Operations Plan (EOP) to provide an organized and coordinated response effort by university personnel and resources in order to minimize the impact of any disaster. The scope of the EOP is restricted to emergency operations in response to an emergency that directly or indirectly affects ASU and its campus, faculty, staff, students and visitors. In addition, ASU implemented Continuity of Operations Plans (COOPs) to address the operational needs of the various functions across the university. The COOPs are focused on the restoration of normal business operations for critical functions including the associated IT recovery aspects.

The Risk & Emergency Management department implemented an enterprise tool, Kualii, to facilitate the creation and management of the COOPs. The tool is a hosted application that allows functional owners to create their plan using a defined template, upload relevant documents, track open action items related to the plan as well as track the overall status of the plan. The Risk & Emergency Management department also provides hands-on training and assistance in developing the plans, utilizing the tool in addition to monitoring the status of the plans to ensure that annual reviews are performed by plan owners. At the time of the audit, there were over 100 plans representing the various functional groups across the university.

Core components of the continuity plans include general departmental information, critical functions, information technology needs and recovery strategies, key resources, staffing requirements, core documents, equipment and supplies, and open action items. Plans for areas that include instruction functions also include additional information is such as

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high and regular priority courses, departmental practices, and special testing issues. Colleges and business functions are responsible for their COOPs and for determining the appropriate level to develop the plan for their specific needs. They are also responsible for ensuring plans are distributed, trained and tested.

Audit Objective: The objectives of the engagement was to assess the design and effectiveness of the Continuity of Operations program to minimize financial losses and mitigate the negative effects of disruptions to university operations. Specific objectives included the following:

- Assess the design and completeness of the Continuity of Operations program;
- Ensure controls are operating to test the Continuity Program on a periodic basis;
- Ensure controls are in place to continually assess and update the plan to reflect the current operating environment; and
- Ensure there is adequate management oversight of the program.

Scope: The scope of the audit was focused on the strategic planning and processes governing the restoration of normal business operations in the event of an interruption or disaster.

Methodology: Our audit consisted of tests of procedures and policies necessary to provide a reasonable basis for expressing our opinion. Specifically, audit work consisted of interviews with ASU staff, review of documented policies and substantive tests including the following areas:

- Assessing the design of the Continuity of Operations program to ensure the following key items are included:
 - Dedicated knowledgeable resources are assigned to the continuity program to ensure compliance and effectiveness.
 - The program considers the recovery and resumption of all critical aspects of the university including technology components.
 - The planning process involves the prioritization of university objectives and critical operations that are essential for recovery.
 - Regular updates are made to the plans related to critical changes to processes and lessons learned from periodic testing.
 - Plans exist to address site/building level needs.
- Assessing the completeness of COOPs through reviewing a sample of 42 plans to ensure information was complete and appropriate.
- Verifying that the core functions of the university were represented by a COOP.
- Assessing the overall testing strategy of the COOPs through the following:

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- Determining if a testing strategy has been defined and implemented with plan owners.
- For a sample of 42 plans, confirm that periodic testing is performed to assess the adequacy of the continuity plans including testing of key third party service providers and formal communication of test results to management.
- For a sample of 42 plans, confirm that training occurs to ensure that key resources are made aware of their roles.
- Ensuring disaster recovery plans exist for critical applications through review of technology recovery strategies of 42 functional plans and inquiry with plan owners.
- Ensuring plans are distributed to key resources, as needed through inquiry with 42 plan owners.
- Assessing if appropriate management oversight is in place over the Continuity Planning program by reviewing available documentation.

Conclusion: Overall, the Continuity of Operations program requires further development and implementation to ensure ASU is able to restore normal operations for critical units after a disaster. A robust Emergency Operations plan has been implemented and addresses the immediate needs of an event; however, existing continuity of operation plans have not been fully implemented nor has there been adequate planning at an enterprise level to ensure the necessary prioritization and strategies are in place to meet ongoing operational needs.

In addition, although there are plans to cover the core areas of the University, approximately 63% of the plans are either still in process or have not been reviewed within the past 12 months. Testing also indicated that core information required within the plan is often incomplete or vague including staffing levels, equipment, technology recovery strategies, and out of date key resources.

It was also noted that a defined testing strategy has not been developed or implemented. While actual testing of the COOPs is the responsibility of the college/business function, the majority of these units have not implemented testing over their plans.

The Risk & Emergency Management department is in process of developing and implementing an Enterprise Continuity of Operations Plan. The purpose of the Enterprise COOP is to identify and prioritize the critical functions across the university to ensure that the limited resources available for recovery efforts are utilized in an effective manner to minimize the impact to the university's overall mission and objectives. It will also address enterprise IT recovery strategies and define an overall testing strategy of the COOPs.

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They are also in process of refreshing emergency plans at a campus and building level to address the immediate recovery needs from a site perspective. This activity is important due to ASU's structure of "One University in Many Places" where most functional groups span various campuses.

The control standards we considered during this audit and the status of the related control environment are provided in the following table.

General Control Standard (The bulleted items are internal control objectives that apply to the general control standards, and will differ for each audit.)	Control Environment	Finding No.	Page No.
Reliability and Integrity of Financial and Operational Information	Not Applicable	N/A	N/A
Effectiveness and Efficiency of Operations			
<ul style="list-style-type: none"> The Continuity of Operations program is managed by a knowledgeable resource. 	Reasonable to Strong Controls in Place.	N/A	N/A
<ul style="list-style-type: none"> The Continuity of Operation program effectively prioritizes university objectives and critical operations that are essential for recovery. 	Significant Opportunity for Improvement.	1	6
<ul style="list-style-type: none"> Emergency Response plans exist for the various campuses and buildings. 	Opportunity for Improvement.	4	9
<ul style="list-style-type: none"> Disaster recovery plans are in place to address the IT component of recovery for enterprise and departmental critical applications. 	Significant Opportunity for Improvement.	2	7
<ul style="list-style-type: none"> The Continuity of Operations program has considered all core functions across the university. 	Reasonable to Strong Controls in Place.	N/A	N/A
<ul style="list-style-type: none"> Continuity plans are complete and contain appropriate level of detail. 	Opportunity for Improvement.	1	6
<ul style="list-style-type: none"> The Continuity of Operations program includes a comprehensive testing and training strategy. Testing is executed on a periodic basis to ensure continued improvement to the overall program is made. 	Significant Opportunity for Improvement.	3	8
<ul style="list-style-type: none"> Management reporting is in place to ensure that university leadership is aware of the current status of the Continuity of Operations program. 	Opportunity for Improvement.	5	10
Safeguarding of Assets	Not Applicable	N/A	N/A
Compliance with Laws and Regulations	Not Applicable	N/A	N/A

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We appreciate the assistance of Preparedness & Security Initiatives staff during the audit.



*David Jones, CEH
IT Auditor*



*Lisa Grace, CPA, CIA, CISA, CISSP
Executive Director*

Audit Results, Recommendations, and Responses

1. The Continuity of Operations program requires further development and implementation.

Condition: The existing Continuity of Operations program has been limited to the creation of functional plans for the various colleges and business units. Plans exist for the core functions across the university; however, the program does not include an overall recovery strategy including the prioritization of critical units across the university to ensure that limited resources are aligned with eliminating or reducing the impact of the interruption to acceptable levels.

In addition, at the time of our testing 63% of the plans were either still in process or had not been reviewed within the past 12 months.

- 31 of 112 (27%) are still in process. These plans were started, however, were not completed.
- 40 of 112 (36%) were finalized, however have not been reviewed within the past 12 months.

It was also noted that plans often included incomplete or vague information regarding staffing levels, equipment needs, technology recovery strategies and out of date key resources.

Criteria: Continuity Planning includes the creation of a strategy to address the threats and risks facing the university including prioritizing functions and critical operations that are essential for recovery to ensure minimal impact to the university's overall objectives and goals.

Cause: The Continuity of Operations program is being implemented in a phased approach. The initial phase included developing functional plans for the core areas of the university that are owned and managed by the individual colleges and business functions. To date, there has not been an enterprise focus to ensure necessary prioritization of functions occur. In addition, there has been minimal oversight to ensure individual colleges and business unit plans are complete and relevant.

Effect: The lack of an enterprise strategy and prioritization combined with the incomplete college and business unit plans puts the university at increased risk of not being able to effectively recovery critical functions in the event of an interruption or disaster.

Recommendation: The Risk & Emergency Management department should complete the Enterprise Continuity of Operations Plan, which should include developing necessary recovery strategies and the prioritization of the critical functions and operations across

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the university. The plan should include increased oversight of the college and business units to ensure complete and appropriate plans.

Management Response: Overall, the Emergency Preparedness department concurs with this finding and recommendation. While the existing program has been effective in developing individual plans across the university, we are now at the point where further focus and implementation is required to ensure risks are appropriately managed. We have recently hired a dedicated resource who will have direct accountability for the ongoing development and implementation of the Enterprise Continuity Program. While we have initiatives already in progress, a formal plan to address this finding will be provided by June 30, 2018, which allows time for the resource to research and develop necessary actions.

2. Disaster recovery planning requires further development and implementation.

Condition: Existing COOPs include an Information Technology section; however, most units refer to the University Technology Office (UTO) for support and do not include specific disaster recovery plans for their critical applications. UTO does not maintain specific disaster recovery plans for department applications.

In addition, specific disaster recovery plans do not exist for enterprise-managed applications. High-level backup and recovery strategies are in place from a datacenter perspective and are tested periodically; however, application level testing is limited.

Criteria: Continuity planning includes ensuring that adequate disaster recovery plans are in place for critical applications. Disaster recovery plans include a documented set of procedures required to recover and typically addresses the recovery time objective (amount of time system can be unavailable) and recovery point objective (amount of data loss that is tolerable) which drive the defined recovery approach.

Cause: The Continuity of Operations program is being implemented in a phased approach. The initial phase included developing functional plans for the core areas of the university that are owned and managed by the individual colleges and business functions. To date, there has not been an enterprise focus to ensure necessary prioritization of functions occur which would include the prioritization of critical applications and environments. As a result, detailed disaster recovery strategies and plans have not been developed for critical applications.

Effect: The lack of defined disaster recovery plans puts the university at increased risk of not being able to effectively recovery critical functions in the event of an interruption or disaster.

Recommendation: The Risk & Emergency Management department should complete the Enterprise Continuity of Operations Plan, which should include developing necessary recovery strategies and the prioritization of the critical functions and applications of the university. As part of this activity, detailed disaster recovery strategies and plans should be developed, including relevant testing strategies to ensure critical applications can be recovered based on defined recovery time objectives and recovery point objectives.

Management Response: Overall, the Emergency Preparedness department concurs with this finding and recommendation. While the existing program has been effective in developing individual plans across the university, we are now at the point where further focus and implementation is required to ensure risks are appropriately managed. We have recently hired a dedicated resource who will have direct accountability for the ongoing development and implementation of the Enterprise Continuity Program. While we have initiatives already in progress, a formal plan to address this finding will be provided by June 30, 2018, which allows time for the resource to research and develop necessary actions.

3. Testing, training and distribution strategies related to Continuity of Operation plans have not been implemented or require improvement.

Condition: An enterprise approach for testing COOPs has not been developed nor implemented. While actual testing of the COOPs is the responsibility of the college/business function, the majority of these units have not implemented testing over their plans. Testing indicated that of the 42 plans assessed, 71% of the functions have not implemented ongoing periodic testing of their plans.

Criteria: A key aspect of effective continuity planning is periodic testing of the plans to ensure that staff have a good understanding of their responsibilities. Testing also allows the recovery team to evaluate the effectiveness of their plan and the opportunity to shore up any weaknesses or shortcomings within the plan. It also ensures that ongoing continued improvement is made to the program.

Cause: The Continuity of Operations program is being implemented in a phased approach. The initial phase included developing functional plans for the core areas of the university that are owned and managed by the individual colleges and business units. This phase has involved a decentralized approach where central resources were available to assist individual colleges and departments in completing their individual plans; however, there has not been an enterprise strategy defined related to testing. As a result, individual units generally have not developed or implemented effective testing.

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Effect: Due to the lack of testing, plan owners may not be aware of potential gaps in their plan; especially given the issue noted above related to incomplete or vague information included in the plans.

In addition, individuals may not be aware of their roles and responsibilities negatively affecting the college or business unit's ability to react in the event of an interruption or disaster. Plan testing provides the opportunity to ensure key resources are effectively trained on their responsibilities and to validate that the plan has been distributed to necessary individuals.

Recommendation: The Risk & Emergency Management department should complete the Enterprise Continuity of Operations Plan, which should include developing an overall testing strategy and minimum testing requirements. The plan should include increased oversight of the college and departmental testing activities to ensure appropriate testing occurs and necessary updates are incorporated into the plans and distributed to key resources as necessary.

Management Response: Overall, the Emergency Preparedness department concurs with this finding and recommendation. While the existing program has been effective in developing individual plans across the university, we are now at the point where further focus and implementation is required to ensure risks are appropriately managed. We have recently hired a dedicated resource who will have direct accountability for the ongoing development and implementation of the Enterprise Continuity Program. While we have initiatives already in progress, a formal plan to address this finding will be provided by June 30, 2018, which allows time for the resource to research and develop necessary actions.

4. Campus/Building Emergency Response plans are not current and require updates.

Condition: Emergency Response plans currently exist at the department level to assist in the safe evacuation of students, faculty, staff and visitors. These plans are intended to compliment the department's Continuity of Operation plan and establish the protocols for a safe and orderly evacuation of people due to a hazard that threatens the university. The plan also assigns responsibilities and defines expectations of building's occupants. While plans exist, they have not been actively managed resulting in incomplete or out of date plans.

Criteria: Emergency Response plans are intended to be developed at a building level using a collaborative approach to include all building occupants. The plan is included to

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guide departmental evacuations, training and ensure a safe evacuation for each area or building as necessary.

Cause: Individual department response plans were rolled out several years ago; however, plans have not been kept current. The initial approach also did not involve a building level approach.

Effect: Departments may not have adequate guidance to ensure a safe evacuation for the area or building.

Recommendation: The Risk & Emergency Management department should complete refreshing Emergency Response plans at a campus and building level to address the recovery needs from a site perspective. Ongoing oversight should also be implemented to ensure plans are tested periodically including ensuring necessary updates are incorporated into the plans.

Management Response: Overall, the Emergency Preparedness department concurs with this finding and recommendation. While the existing program has been effective in developing individual plans across the university, we are now at the point where further focus and implementation is required to ensure risks are appropriately managed. We have recently hired a dedicated resource who will have direct accountability for the ongoing development and implementation of the Enterprise Continuity Program. While we have initiatives already in progress, a formal plan to address this finding will be provided by June 30, 2018, which allows time for the resource to research and develop necessary actions.

5. Management reporting over the Continuity of Operations program requires improvement.

Condition: The Risk & Emergency Management team provides ongoing updates on the Continuity of Operations program through the Emergency Preparedness Group meetings; however, this process could be improved by developing specific metrics for the key components of the program to ensure management understands the overall status of the program and the risks associated with key components still in development.

Criteria: University leadership has visibility into the status of the Continuity of Operations program to ensure that appropriate decisions can be made to mitigate the impact of interruptions to acceptable levels.

Cause: Existing updates are primarily related to activities currently in motion at the time of the meeting or that are coming up in the near future; however, do not provide an overall status of the program.

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Effect: University leadership may not have a complete understanding of the program status resulting in necessary resources not being considered to ensure the program is fully implemented.

Recommendation: The Risk & Emergency Management team should formalize reporting to the Emergency Preparedness Group to ensure the status of the overall program is clearly communicated including core components that have not yet been started or are still in process of being implemented.

Management Response: Overall, the Emergency Preparedness department concurs with this finding and recommendation. While the existing program has been effective in developing individual plans across the university, we are now at the point where further focus and implementation is required to ensure risks are appropriately managed. We have recently hired a dedicated resource who will have direct accountability for the ongoing development and implementation of the Enterprise Continuity Program. While we have initiatives already in progress, a formal plan to address this finding will be provided by June 30, 2018, which allows time for the resource to research and develop necessary actions.

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