



Report to the Audit and Compliance Committee of the  
UHS Board of Regents on:

The University of Houston-Downtown  
Research Governance and Process Overview  
AR2022-13

UNIVERSITY of **HOUSTON** SYSTEM

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INTERNAL AUDITING DEPARTMENT

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# EXECUTIVE SUMMARY

## Overview and Scope Summary

The Office of Research and Sponsored Programs (ORSP) of the University of Houston-Downtown (UHD) supports faculty, staff and students in the creation and dissemination of new knowledge through ethical scholarship, research, and creative activities. The ORSP provides pre-award support, post-award accounting and compliance oversight for contracts and grants. The scope for this audit was a review of the current controls and procedures in place that are used to help ensure research related activities are properly managed and monitored and comply with applicable regulations.

## Observations

The University of Houston System (UHS) Internal Auditing Department focused on evaluating the various processes related to managing research related activities. The audit identified the need for the ORSP to develop a written data management and sharing policy and utilize the services of the UHD Information Security Officer in research related activities; for the UHD Information Security Officer to improve the lines of communication with ORSP and UHD Information Technology (UHD IT); and for UHD IT to develop and document a governance model to address recommendations presented in a platform security assessment and rebuild a High- Performance Computing environment, in response to a security incident.

## Overall Audit Opinion

The ORSP has adequate processes in place for managing research related activities. However, the audit noted areas for improvement, which include the development of a data management and sharing policy; participation of the UHD Information Security Officer in research related activities; and enhanced lines of communication between the UHD Information Security Officer, ORSP and UHD IT.

## Recommendations

1. The ORSP should develop a university research data management and sharing policy, including the requirement for a formalized, written data management plan for all university projects.
2. The ORSP should involve the UHD Information Security Officer in research related activities, including, but not limited to, trainings, award kick-off meetings and data management plan reviews.
3. The UHD Information Security Officer should regularly meet with the ORSP and UHD IT to improve lines of communication, prevent communication breakdowns, and misunderstandings.
4. The High-Performance Computing Environment managed within the Department of Computer Science and Engineering Technology should be placed out of service until a formal governance model has been developed in coordination with the UHD IT department and the Department of Computer Science and Engineering Technology. In addition, the governance model must be approved by the UHS Chief Information Officer.
5. UHD IT and the Department of Computer Science and Engineering Technology should coordinate to rebuild the High-Performance Computing environment based on the recommendations made in the June 9, 2021 assessment from the Office of the UHS Chief Information Security Officer and submit confirmation to the UHS Chief Information Security Officer when completed.

# **UNIVERSITY OF HOUSTON-DOWNTOWN RESEARCH GOVERNANCE AND PROCESS OVERVIEW**

## **INTRODUCTION**

The UHS Department of Internal Auditing developed an annual audit plan based upon a system-wide risk assessment to identify significant areas of risk facing the University of Houston System. All the audits on the audit plan are conducted in accordance with Generally Accepted Government Auditing Standards (GAGAS), and the International Standards for the Professional Practice of Internal Audit, published by the Institute of Internal Auditors (IIA).

## **BACKGROUND**

The Office of Research and Sponsored Programs of the University of Houston-Downtown (ORSP) serves to expand the educational opportunities available to undergraduate students at the University, support research related activities, encourage scholarly inquiry and support the development of new knowledge to enhance the academic structure of the University.

The ORSP serves as the designated office for the submission of proposals to potential sponsors; for the administration of grants, contracts and other agreements awarded to UHD by these sponsors; and for compliance with applicable federal, state and sponsor regulations. While awards for successful proposals are made to UHD, the Principal Investigator is responsible for the management, execution, and completion of the project, including submission of all required reports. The ORSP provides information, assistance, and technical support to the Principal Investigator during the administration of the project.

## **OBJECTIVE AND SCOPE**

The audit objectives were to:

- Determine whether there is adequate oversight in place to ensure research related activities are properly managed and monitored.
- Determine whether there are adequate controls and procedures in place to ensure that research related activities comply with applicable policies, procedures, regulations, statutes, and laws.
- Determine whether standardization is utilized for efficiency among departments and universities.

Information relevant to this audit was obtained through:

- Interviewing research and information security personnel.

- Conducting walkthroughs over key processes.
- Reviewing laws and regulations.
- Reviewing UHS and UHD policies and procedures.

## **ISSUE 1 – HIGH PERFORMANCE COMPUTER SYSTEM**

**Objective:** To determine whether there are adequate controls and procedures in place to ensure that research related activities comply with applicable policies, procedures, regulations, statutes, and laws.

**Criteria:** System Administration Memorandum (SAM) 07.A.08 (Data Classification and Protection) and System Administration Memorandum 01.D.06 (Protection of Confidential Information)

**Risk:** Establishing clear roles, responsibilities and appropriate controls for the security of information prevents information subject to local and federal laws from being copied or removed from secure servers. The copying or removal of such data can lead to fines, loss of research, and loss of confidence in the university and faculty members abilities to protect and secure data.

**Observation:** The ORSP serves as the designated office for the submission of proposals to potential sponsors; for the administration of grants, contracts and other agreements awarded to UHD by these sponsors; and for compliance with applicable federal, state and sponsor regulations. According to the Sponsored Program Guide, the ORSP is responsible for providing information, assistance, and technical support to the Principal Investigator during the administration of the project.

System Administration Memorandums 07.A.08 (Data Classification and Protection) and 01.D.06 (Protection of Confidential Information) require appropriate classification of data; technical and physical security safeguards; data protection requirements; and guidelines, safeguards, and controls to protect confidential information. While the information owner (in this case the Principal Investigator) holds ultimate responsibility for these requirements, the ORSP and UHD Information Security Officer hold unique positions to coordinate with the Principal Investigator to ensure that this is appropriately managed.

UHD does not currently have a data management and sharing policy to help ensure consistency in the appropriate handling, storage, and dissemination of research data. In addition, and a formalized, written data management plan is prepared for university projects only when required by the sponsoring agency.

A High-Performance Computer (HPC) was secured in 2016 by grant funding and is used by UHD faculty for research and academic coursework. According to the UHD AVP for Faculty, Research and Sponsored Programs, the HPC grant proposal was managed by previous ORSP administration and was submitted without adequate oversight. Elements were missing from the funded proposal that should have been addressed during the grant development process. The grant proposal did

not include funding for staffing the HPC; did not contemplate HPC space and infrastructure requirements; and did not contain a written data management plan.

The HPC is managed by two UHD Department of Computer Science and Engineering Technology professors. The professors partnered with a team from UHD Information Technology (UHD IT) to build the HPC environment; however, UHS Information Security was not consulted to ensure all appropriate security best practices for the System were followed.

On November 7, 2019, a coin miner installed on the HPC environment with a connection to a C2 server in the Netherlands was detected. The connection was successfully blocked, and communications ceased. At the time of the security incident, there were no back-ups of the environment, which is in violation of SAM 07A.08 (Data Classification and Protection). UHS Information Security was unable to proceed with remediation due to concerns of potential data loss and damage to the environment.

As a result of the security incident, two reports were prepared by UHS Information Security: an investigation report and a computing environment and platform security assessment. The investigation report, dated November 20, 2019, contained a detailed explanation of the incident and timeline of events, and included findings and recommendations; specifically, the need to rebuild the HPC environment. The assessment, dated June 9, 2021, contained review summaries and comments over aspects of the HPC environment, and included recommendations, specifically the need for an effective, documented governance model.

The ORSP and UHD IT stated that they recently received the November 20, 2019, report and the ORSP received the June 9, 2021, on July 9, 2021. The breakdown in communication between the UHD Information Security Officer, ORSP and UHD IT, has resulted in misunderstandings regarding required actions to be taken to address the issues noted on the two reports.

## **RECOMMENDATIONS:**

1. The ORSP should develop a university research data management and sharing policy, including the requirement for a formalized, written data management plan for all university projects.
2. The ORSP should involve the UHD Information Security Officer in research related activities, including, but not limited to, trainings, award kick-off meetings and data management plan reviews.
3. The UHD Information Security Officer should regularly meet with the ORSP and UHD IT to improve lines of communication, prevent communication breakdowns, and misunderstandings.
4. The High-Performance Computing Environment managed within the Department of Computer Science and Engineering Technology should be placed out of service until a formal governance model has been developed in coordination with the UHD IT department and the Department of Computer Science and Engineering Technology. In addition, the governance model must be approved by the UHS Chief Information Officer.
5. UHD IT and the Department of Computer Science and Engineering Technology should

coordinate to rebuild the High-Performance Computing environment based on the recommendations made in the June 9, 2021 assessment from the Office of the UHS Chief Information Security Officer and submit confirmation to the UHS Chief Information Security Officer when completed.

#### **MANAGEMENTS RESPONSE:**

ORSP will review UH MAPP 08.03.01 and SAM 07.A.08 to draft a Research Data Management and Sharing Policy that meets all minimum requirements and is operational within our institutional context.

ORSP will engage with the UHD Information Security Officer (ISO) to: invite the ISO into award kick-off meetings; plan participation in data management plan reviews; and plan regular trainings around data management and security.

Beginning in Spring 2022, UHD IT leadership will coordinate regularly scheduled meetings between UHD ORSP, UHD ISO and UHD IT to discuss how best to work together to protect UHD's research technology systems and infrastructure including data.

The High-Performance Computing Environment managed within the Department of Computer Science and Engineering Technology has been placed out of service since January 18, 2022. It will be kept off-line until a formal governance model has been approved by the UHS Chief Information Officer. A Formal Governance document has been completed and awaiting final approvals.

UHD IT and the Department of Computer Science and Engineering Technology have coordinated the rebuild of the High-Performance Computing environment based on the recommendations made in the June 9, 2021 assessment from the Office of the UHS Chief Information Security Officer. This was completed on February 15, 2022 and confirmation of the status will be submitted to the UHS Chief Information Security Officer.

\* \* \* \* \*

The UHS Department of Internal Auditing would like to thank the Office of Research and Sponsored Programs of the University of Houston-Downtown, UHD Information Technology and UHS Information Security for their cooperation and assistance during this review.

Sincerely,

A handwritten signature in black ink, appearing to read "Phillip W. Hurd". The signature is fluid and cursive, with a prominent initial "P" and "H".

Phillip W. Hurd  
Chief Audit Executive  
University of Houston System

Participating Auditors: Brandee O'Neal, Tony Moreno and Elias McClellan



**UNIVERSITY of HOUSTON**  
INTERNAL AUDITING DEPARTMENT

| Action Item Number | Audit Area              | University | Recommendation Summary  | Task  | Responsible Person   | Targeted Date | Status      |
|--------------------|-------------------------|------------|---|---|--|---------------|-------------|
| 1                  | Policies and Procedures | UHD        | The ORSP should develop a university research data management and sharing policy, including the requirement for a formalized, written data management plan for all university projects.   | ORSP will review UHMAP 08.03.01 and SAM 07.A.08 to draft a Research Data Management and Sharing Policy that meets all minimum requirements and is operational within our institutional context.   | Jerry Johnson (AVPFRSP); Brandi Smith-Irving (Exec.Dir.ORSP); Damian Walsh (Asst.Dir.Res.Compliance) | 30-Jun-22     | In-Progress |
| 2                  | Policies and Procedures | UHD        | The ORSP should involve the UHD Information Security Officer in research related activities, including, but not limited to, trainings, award kick-off meetings and data management plan reviews.  | ORSP will engage with the UHD Information Security Officer (ISO) to: invite the ISO into award kick-off meetings; plan participation in data management plan reviews; and plan regular trainings around data management and security.   | Jerry Johnson (AVPFRSP); Brandi Smith-Irving (Exec.Dir.ORSP); Damian Walsh (Asst.Dir.Res.Compliance) | 30-Apr-22     | In-Progress |
| 3                  | Policies and Procedures | UHD        | The UHD Information Security Officer should regularly meet with the ORSP and UHD IT to improve lines of communication, prevent communication breakdowns, and misunderstandings.   | Beginning in Spring 2022, UHD IT leadership will coordinate regularly scheduled meetings between UHD ORSP, UHD ISO and UHD IT to discuss how best to work together to protect UHD's research technology systems and infrastructure including data.  | Hossein Shahrokhi (AVP, IT and CIO)  | 15-Mar-22     | Completed   |
| 4                  | Policies and Procedures | UHD        | The High-Performance Computing Environment managed within the Department of Computer Science and Engineering Technology should be placed out of service until a formal governance model has been developed in coordination with the UHD IT department and the Department of Computer Science and Engineering Technology. In addition, the governance model must be approved by the UHS Chief Information Officer. | The High-Performance Computing Environment managed within the Department of Computer Science and Engineering Technology has been placed out of service since January 18, 2022. It will be kept off-line until a formal governance model has been approved by the UHS Chief Information Officer. A Formal Governance document has been completed and awaiting final approvals.   | Hossein Shahrokhi (AVP, IT and CIO)  | 15-Mar-22     | Completed   |
| 5                  | Policies and Procedures | UHD        | UHD IT and the Department of Computer Science and Engineering Technology should coordinate to rebuild the High-Performance Computing environment based on the recommendations made in the June 9, 2021 assessment from the Office of the UHS Chief Information Security Officer and submit confirmation to the UHS Chief Information Security Officer when completed.   | UHD IT and the Department of Computer Science and Engineering Technology have coordinated the rebuild of the High-Performance Computing environment based on the recommendations made in the June 9, 2021 assessment from the Office of the UHS Chief Information Security Officer. This was completed on February 15, 2022 and confirmation of the status will be submitted to the UHS Chief Information Security Officer. | Hossein Shahrokhi (AVP, IT and CIO)  | 1-Mar-22      | Completed   |