ANNEXURE A

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG

SCOPE OF WORK DOCUMENT

FOR

PROJECTION SYSTEM FOR THE DIGITAL DOME AT THE UNIVERSITY

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1 Background & Purpose

1.1 Historical Context

In 1956, The Festival Committee of the city of Johannesburg, formed to commemorate the seventieth anniversary of the city's founding, embarked on a mission to raise funds for the acquisition and housing of a Zeiss Planetarium. Collaborating with Zeiss, a Zeiss MKII star projector was procured from the Hamburg Planetarium, Germany, in operation since 1930. This projector was upgraded to an MKIII and installed in Johannesburg in 1960. Subsequently, ownership was transferred to the University of the Witwatersrand (hereinafter referred to as “Wits”), where it has been serving visitors at the Planetarium since 1960, attracting over 4 million visitors.

1.2 Necessity of Digital Transformation

With the digital era upon us, the need to transform our optical-mechanical star projector into a digital system has become imperative. The goal is to provide digital educational and entertainment experiences, facilitate research in data visualization, and support MSc and PhD students. Additionally, the digitalized dome will serve as a versatile facility for hosting various events and seminars, enhancing undergraduate teaching and learning.

1.3 Objectives

The objectives of this digitalization effort are two-fold:

1. Transform the existing dome into a digital format to provide educational experiences and research opportunities.
2. Create a versatile facility for hosting events, seminars, and supporting undergraduate teaching and learning.

1.4 Evolution of the Wits Digital Dome

This transformation represents an evolution of the Wits Digital Dome, which has been a source of inspiration for over 63 years. The Zeiss Star Projector, installed in 1960, needs to evolve to meet modern digital demands. The digitalization process will enhance the visitor experience, foster student training, facilitate multidisciplinary research, and enable a wide range of modern edutainment opportunities.

1.5 Enriching Learning and Research

The establishment of this new facility is poised to enrich learning in science, technology, engineering, art, and mathematics (STEAM). Anticipated outcomes include an increase in the number of annual visitors, better-trained students, expanded research horizons, and a sustainable entity within the university.

1.6 Implementation Strategies

To achieve our objectives, we will implement various strategies, including new signage, effective marketing, an improved booking system, enhanced visibility through external lighting, and staff appointments. The Steering Committee will transform into a Programme/Executive Committee.

1.7 Alignment with University Goals

Our initiatives align seamlessly with the university's strategic vision and goals, yielding societal benefits. These initiatives encompass human capacity development, research outputs, and increased awareness.

1.8 University Appointment of Service Provider

In alignment with the terms of the draft agreement, the University appoints the Service Provider on a non-exclusive basis to deliver the Goods and Services as specified within the Scope of Work (SOW). This appointment entails a mutual commitment between the University and the Service Provider to fulfil their respective roles and responsibilities in line with the project's objectives. The University's role encompasses defining project requirements, providing necessary support, and ensuring adherence to quality and performance standards. The Service Provider, on the other hand, is responsible for delivering the Goods and Services within agreed-upon timelines, adhering to the project's scope, and maintaining the quality and performance levels expected.

1.9 Comprehensive Objectives

These objectives encompass undergraduate teaching and learning, postgraduate training, multidisciplinary research, outreach efforts, stakeholder relations, and income generation.

2 Scope of Work

2.1 Infrastructure

- Ensure compatibility with existing infrastructure: 20m Aluminium perforated dome with 0° tilt.
- Install a projection system consisting of no less than 5 cove-mounted projectors for a 180-degree domed screen with 0-degree tilt and 360-degree field of view.
- Ensure digital dome software integrates with the existing digital surround sound system.

2.2 Shows

- Preinstall full dome shows currently licensed by the supplier at a resolution congruent with the new projection system.

2.3 The projection system

The projection system should meet the following specifications to ensure the optimal performance of the digitalized dome:

- **Full-Dome Projection Capability:** The system must ensure full-dome projection capability with a 360-degree by 180-degree field of view, providing an immersive and all-encompassing visual experience.
- **Seamless Integration and Alignment**: The projector system **must** provide seamless integration and alignment, allowing for the coherent and undisturbed display of content across the dome.
- **Automatic Blending System**: The projection system must support an automatic blending system to ensure seamless optical blending in both light and dark scenes, creating a continuous and harmonious visual experience.
- **Resolution**: The projection system should comprise a Pure RGB laser light source and be capable of projecting full-dome images with an impressive 8k resolution, utilizing true 4k (4096 x 2160) resolution projectors.
- **Brightness**: To guarantee vibrant and clear visuals across the entire dome, the projectors used should have a minimum brightness of 10,000 lumens.
- **Contrast Ratio**: The proposed projection system should offer a contrast ratio of up to 20,000:1, which is essential for delivering rich and detailed visuals, particularly in scenes with varying levels of brightness and darkness.

Please ensure that the proposed projection system adheres to these specifications, as they are crucial to meeting the quality and performance standards of the digitalized Dome.

2.4 Production Suite

- Include a production system allowing the creation of shows with pre-selected visualizations.
- Provide elements for show compilation, including Digital Dome elements, images, videos, text, labels, audio, and control commands.
- Offer a separate computer with Digital Dome software for offline show development.
- Enable open caption subtitles for full dome shows.

Image/Show Generation and Display

- Allow playback of full dome shows with pause, continue, and stop functions.
- Enable the creation of automated shows through a user-friendly graphical interface.
- Support automatic, manual, and combined modes for presentation.
- Provide the ability to stream external sources onto the dome.
- Offer an intuitive interface for content display and control.

2.5 Control System

The control system should encompass the following features and capabilities:

- **Easily Accessible Controls:** Ensure easily accessible controls for sound and lighting to provide a user-friendly and efficient interface for staff operating the system.
- **Wireless Remote Control or Web-Based Interface:** Offer a wireless remote control or web-based interface with the ability to start and stop shows, simplifying the operation of the digital Dome.
- **Customization Options:** Provide customization options for control pages to cater to various content, show types, and user preferences, enhancing flexibility and adaptability.
- **Compatibility with Wireless Tablets and Game Controllers:** The system should be compatible with wireless tablets and game controllers, such as Xbox, PlayStation, or Nintendo controllers, allowing for versatile control options.
- **Ability to Add a Manual Control Panel:** The system must have the ability to add a manual control panel, enhancing control options and facilitating manual adjustments as needed.

2.5.1 Audio Specifications:

- The system should integrate a high-fidelity audio setup capable of delivering immersive soundscapes. Recommended specifications include:
- Multichannel audio support (5.1, 7.1, or higher) for a fully immersive experience.
- High-quality speakers strategically positioned to complement the dome visuals.
- Compatibility with various audio formats (Dolby Atmos, DTS:X, etc.) to enhance the depth and realism of audio content.

Ensure that these features are integrated into the control system to optimize the management and operation of the digitalized Dome.

2.6 Astronomical Usage

The digitalized Dome should be equipped with features that enhance the astronomical experience, including but not limited to the following:

- **Digital Dome Comparable to Classical Dome Projections:** Provide a digital dome that offers a viewing experience comparable to classical Dome projections, creating an immersive and engaging visual experience for visitors.
- **Complete, Accurate Star Field with Adjustable Settings:** Ensure the presence of a complete, accurate star field with the ability to adjust the number of stars visible to the naked eye. Simulate views from urban, suburban, and rural settings, as well as through a small telescope or binoculars. Additionally, enable the dimming of the Milky Way from 0 to 100% to create varying levels of realism in the night sky.
- **Variety of Constellation Outlines with Multiple Representation Options:** Offer a variety of constellation outlines, with the ability to display individual constellations separately. Provide options for constellation representations, including "connective stick" diagrams, classical artistic depictions, and constellation boundaries. Include constellations from various cultures, ensuring coverage of all 88 constellations as defined by the International Astronomical Union including Argo Navis. Additionally, consider the inclusion of constellations from Stellarium and other sky cultures.
- **Projection of the Sky as Seen from Any Location and Time:** Develop a system capable of projecting an accurate representation of the celestial sky visible from any location on Earth, at any historical or future moment in time. This system should accommodate adjustments accounting for Earth's precession, including both gradual and instantaneous changes, ensuring precision in astronomical renderings. Compatibility with the OpenSpace project is desirable.
- **Augmented Astronomy Database with Public Domain Data Sets:** The astronomy database should be augmented by a substantial number of related data sets available in the public domain. This may include data from organizations such as the National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), NASA Jet Propulsion Laboratory (JPL), Sloan Digital Sky Survey (SDSS), Oort & radio spheres, Wilkinson Microwave Anisotropy Probe (WMAP), Digital Universe, and Open Space. The database should be expandable and regularly updated, with compatibility for Data2Dome. Specify which data sets are supported and outline any requirements for integration into the Digital Dome system.
- **Zooming Capability for Celestial Objects:** Provide the ability to zoom in on celestial objects, including but not limited to Messier and similar objects, enhancing the audience's exploration of the cosmos.
- **Pointer with Programmable Features:** Offer a pointer with programmable features to highlight specific objects and details within the digital dome, enhancing the educational and interactive aspects of the Digital Dome experience.
- **Control Over Planetary Atmosphere:** Enable the ability to turn on and off the planetary atmosphere, allowing for different viewing conditions and atmospheric effects.
- **Space Flight and Exploration:** The system must provide the ability to fly to, orbit, and view from space various astronomical objects, including planets, moons, asteroids, stars, and volumetric planetary nebulae. It should ensure that any "flight path" maintains spatial orientation and does not introduce unrealistic artefact's, such as passing through celestial bodies.
- **Realistic Planetary Surfaces:** Include realistic planetary surfaces for Earth and other celestial objects, enhancing the visual representation and educational value of the Digital Dome experience.
- **Simulation of Interactions Between Celestial Objects:** The system must have the capability to calculate and simulate interactions between celestial objects, including phenomena such as eclipses and transits.

Ensure that these features are integrated into the digitalized Digital Dome to provide a comprehensive and immersive astronomical experience for visitors.

2.7 Non-Astronomical Usage

The full-dome digital system should encompass not only astronomical content but also serve as a versatile platform for interactive projection of various non-astronomy subjects. It must possess the following capabilities:

- **Real-time Programmable Rendering and Display:** The system should feature an open application programming interface (API) enabling direct user-controlled access to rendering, blending, and display functionalities in real time. This API should empower user-written software to interact with the projection system without necessitating prior data conversion to a video format. This functionality ensures dynamic adaptability and scriptability for on-the-fly modifications**.**
- **Enable Rendering and Exporting of Full-Dome and 360-Video:** The system should have the capability to render and export full-dome and 360-video content compatible with virtual reality (VR) headsets, enhancing the immersive experience for visitors.
- **Support Playing of Full-Dome Non-Astronomy Content:** The full-dome computer platform must allow for the playback and projection of non-astronomy content related to various subjects, including but not limited to the following areas:
    - **Architecture:** Allow the projection of architectural content for educational and design purposes.
    - **Art:** Support artistic content, potentially for art installations and multimedia art displays.
    - **Biology:** Facilitate the projection of biological content, such as cellular processes and organisms.
    - **Chemistry:** Support the display of chemistry-related content, including molecular structures and chemical reactions.
    - **Earth Science:** Enable the projection of content related to Earth's geology, climate, and environmental sciences.
    - **Gaming:** Allow the development and execution of interactive real-time full-dome projection video games and other real-time interactive content, with direct accessibility of graphics hardware-accelerated rendering, blending, and display.
    - **Mathematics:** Enable the projection of mathematical concepts, including fractals and geometric shapes.
    - **Physics:** Include the capability to project physics content, covering macroscopic and microscopic phenomena.
- **Display Content from Any Video or Image Feed:** The system must be able to display content from any video or image feed on the dome. This includes the ability to project content from various sources, such as streaming platforms, locally saved files, presentations, and images accessible over the internet.
- **Display Content from External Devices:** Describe options for connecting external devices and outline any considerations related to latency or compatibility.

Ensure that these functionalities are integrated into the full-dome digital system to expand its educational and entertainment capabilities beyond astronomy content. Visitors should benefit from a diverse range of interactive and immersive experiences across multiple subject areas.

2.8 Integration

- Support the sharing of user-created content among other Digital Domes.

- Enable live streaming of dome content to and from other domes in a Digital Dome network.
- Simplify the process for downloading content from the cloud and regularly update available content.

3 Standards

- Ensure compliance with relevant standards, including resolution and image quality, projection standards, audio standards, safety standards, and integration standards.

4 Compliance & Legislative Requirements

- Ensure compliance with local and national safety regulations and accessibility standards.

5 CLOUD-BASED STORAGE, ACCESS, AND SECURITY PROTOCOLS

5.1 Storage Location and Security

- There shall be a provision for cloud-based storage, ensuring secure and accessible storage of data. All data storage locations must comply with relevant data protection laws and regulations.

5.2 Risks Associated with Foreign Data Storage

- Due to concerns about potential risks associated with data storage in a foreign country, a comprehensive evaluation of these risks must be conducted. This evaluation will specifically address potential threats to intellectual property and data security.

5.3 Intellectual Property Rights and Access Post-Contract Termination

- Clear guidelines concerning intellectual property rights and access post-contract termination should be established and documented. Protocols for accessing and retrieving intellectual property after the contract's conclusion must be clarified.

5.4 Assessment and Confirmation

- The Vendor is responsible for providing detailed information on the cloud-based storage locations, data access protocols, and security measures implemented. This information will undergo evaluation to assess the risks associated with data storage, especially regarding intellectual property protection.

5.5 Compliance and Assurance

- The Vendor must ensure that all cloud-based storage facilities adhere to robust security protocols and comply with international data protection standards. An assurance of data integrity, confidentiality, and accessibility must be provided.

5.6 Documentation and Reporting

- A detailed report regarding the assessment of risks associated with foreign data storage and intellectual property protection should be submitted. This report will serve as a reference for ensuring compliance and mitigating potential risks.

6 Customer Support Portal

The Service Provider must provide a dedicated customer support portal as part of the full-dome digital system. This portal should encompass the following components:

- **Release Notes for Current Software Version:** Regularly update release notes for the current software version to keep users informed about new features, improvements, and bug fixes.
- **Historical Software Version Release Notes:** Maintain a record of release notes for previous software versions, allowing users to reference changes and updates over time.
- **User Guides:** Provide comprehensive user guides to assist users in effectively utilizing the system's features and capabilities.
- **Recorded Training Videos:** Offer a library of recorded training videos covering system operation, maintenance, and usage. These videos should be easily accessible for users.
- **Videos Explaining Specific Tools or Highly Pertinent Subjects:** Include videos that explain specific tools and address highly pertinent subjects related to the system. These could include webinars or instructional content. The frequency of new additions to this section should be clearly specified.
- **Support Accessibility:** Ensure that information on how to access customer support services is readily available to all users. Clearly explain any conditions or prerequisites for contacting support, including support contract payment requirements or designated contacts.

7 Warranty

To provide a seamless and reliable user experience, the full-dome digital system must come with a comprehensive three (3) year warranty. The warranty should include:

- **Comprehensive Maintenance and Emergency Support (2024):** The Service Provider must offer comprehensive maintenance and emergency support services during the initial three (3) years of the system operation. This should cover technical assistance, troubleshooting, and repair services as needed.
- **Option to Extend Support:** Users should have the option to extend support beyond the initial three (3) year. Provide details about the terms and costs associated with extended support.
- **Technical Support via Email and Phone:** The Service Provider should offer technical support via both email and phone. These support services should be available during extended business hours and after-hours to accommodate a wide range of user schedules.
- **Rapid Response and Repair Times:** Commit to rapid response times for addressing user issues and providing timely repairs. The availability of spare parts should be assured to minimize system downtime.

7.1 Annual Software Upgrades

- The warranty should explicitly encompass annual software upgrades throughout the warranty period to maintain the system's operational efficiency and address potential vulnerabilities. These upgrades should include new features, bug fixes, and security patches aimed at enhancing the system's performance and reliability. The Service Provider must provide clear documentation outlining the schedule and scope of these annual software upgrades, ensuring that the system remains up-to-date and aligned with industry standards.

8 Training

To ensure that users can effectively operate and maximize the potential of the full-dome digital system, comprehensive training services are vital. The Service Provider must adhere to the following training requirements:

- **Provide Training for Digital Dome Operators:** The Service Provider should provide comprehensive training for Digital Dome operators during the installation process and within the month following the completion of installation. This training program should cover both on-site and off-site scenarios, equipping operators with the necessary skills and proficiency to effectively manage and operate the digital system.
- **Professional Development Events:** Organize professional development events to keep Digital Dome operators updated with the latest features, tools, and best practices.
- **System Documentation:** Ensure that system documentation is comprehensive and user-friendly. This documentation should be designed to facilitate user proficiency in system operation and maintenance.
- **Mandatory On-Site Training During Installation:** On-site training during the installation process is mandatory. The Service Provider must provide a detailed description of the training topics covered during this on-site session.
- **Comprehensive Training Program:** Offer a comprehensive training program that covers various aspects. This program should include information about the training's duration, the range of topics covered, the intended audience, and any other relevant details.
- **Ongoing Training Options:** The Service Provider must provide ongoing training options throughout the contract period. This should include regular training sessions and, ideally, free training opportunities to ensure that users can continuously enhance their skills.

9 Change Management

- Allow for proposed changes through written change requests, which will be reviewed and negotiated by both parties. Changes must be documented in signed written amendments.

10 Contract Management

Effective contract management is crucial to ensure the smooth functionality and performance of the supplied projector systems and associated audiovisual equipment, including electronics and software. The following requirements must be adhered to for contract management:

- **Wits and the School of Physics Oversight:** The Campus Planning and Development Unit, in collaboration with the School of Physics, shall be responsible for overseeing the contract pertaining to the functionality and performance of the supplied projector systems and associated audiovisual equipment, electronics, and software.

- **Mandatory Initial Training:** Upon commissioning, it is mandatory to conduct an initial training session to ensure the effective operation of these systems. This training should cover hardware and software aspects of the system.
- **Remote Meetings for Issue Resolution:** In the event of any functional issues, whether hardware or software-related, remote meetings will be conducted as needed to address and resolve these issues effectively.
- **Comprehensive Record Keeping:** The Digital Dome staff will maintain a comprehensive record of all contract-related proceedings, including training sessions, issue resolution meetings, and updates.
- **Secure Contract Storage:** The contract shall be securely stored at the facility, ensuring that it is readily accessible when needed.
- **Regular Meetings for Updates and Issue Assessment:** Regular meetings will be held to provide updates, address ongoing issues, and assess the performance of the projector systems and associated equipment. These meetings are essential for continuous improvement.
- **Monthly Reports:** Monthly reports on the status of the system, performance metrics, and any issues encountered must be provided to track the system's performance over time.
- **Annual Performance Review:** An annual performance review will take place to comprehensively evaluate the system's functionality, identify areas for improvement, and ensure that it meets the intended requirements.
- Service Provider's **Active Customer Satisfaction Monitoring:** The Service Provider must actively monitor and strive to improve customer satisfaction related to the services provided under this contract. The Service Provider will assess the services, conduct regular assessments, and collect feedback to enhance customer satisfaction levels. This proactive approach is essential to ensuring that the services provided meet the expectations of the University.
- **Annual Performance Review:** Annually, both parties will engage in an annual performance review. This review will assess the Service Provider 's performance in the preceding year, including a comprehensive evaluation of key performance metrics and any areas of concern. The University and the Service Provider will collaborate to identify areas for improvement and set goals for the upcoming year. This annual review process is crucial for maintaining the quality and effectiveness of the services provided.
- **Adherence to Agreed Monitoring Standards:** The Service Provider must adhere to agreed-upon monitoring standards throughout the duration of this contract. Any changes or adjustments to these standards must be mutually agreed upon by both parties. The University reserves the right to audit and verify the Service Provider 's adherence to these standards at any time to ensure that the services are delivered in accordance with the specified standards.

These contract management requirements are designed to maintain effective oversight, timely issue resolution, and continuous performance assessment of the full-dome digital system.

11 Timeframes and Installation

- Equipment installation should be completed with training by **30 November 2024**.
- The Service Provider is responsible for providing all necessary equipment.

12 Milestones and Project Plan

12.1 Milestones

The successful execution of the project will be marked by a series of predefined milestones, each signifying the accomplishment of specific project stages. These milestones, which are integral to the project's overall progress, are detailed below:

Milestone 1: Infrastructure Readiness

- Description: Completion of infrastructure preparation to ensure compatibility with the new projector system.
- Completion Date: 30 April 2024

Milestone 2: Projection System Installation

- Description: Installation of the projection system, including alignment and integration of projectors for the digitalized Dome.
- Completion Date: 30 November 2024

Milestone 3: Full Dome Show Preinstallation

- Description: Preinstallation of full dome shows with resolution congruent to the new projection system.
- Completion Date: 31 October 2024

Milestone 4: Production Suite Setup

- Description: Setup of the production system for show creation and compilation, including elements for show components.
- Completion Date: 31 October 2024

Milestone 5: Control System Implementation

- Description: Implementation of the control system, enabling user-friendly interface for content display and interaction.
- Completion Date: 31 October 2024

Milestone 6: Astronomical Features Integration

- Description: Integration of astronomical features, ensuring realistic representations of celestial objects and celestial events.
- Completion Date: 31 October 2024

Milestone 7: Non-Astronomical Features Integration

- Description: Integration of features for non-astronomical content projection.
- Completion Date: 31 October 2024

Milestone 8: Integration and Compatibility Testing

- Description: Comprehensive testing of system integration and compatibility to ensure seamless functionality.
- Completion Date: 31 October 2024

13 Project Plan

The project plan outlines the broader timeline and key activities to be undertaken to achieve successful project completion. It encompasses the following key elements:

Project Start Date: [2 June 2024] **Project End Date**: [30 November 2024]

Project Phases

1. **Initiation:** Setting project objectives, roles, and responsibilities.
2. **Planning:** Detailed project planning, including milestones, resource allocation, and timelines.
3. **Execution:** Implementation of the plan, including infrastructure setup and system installation.
4. **Testing and Validation:** Comprehensive testing of system functionality and validation against project requirements.
5. **Training and User Familiarization:** User training and familiarization with the digital Dome system.
6. **Acceptance and Handover:** Final acceptance testing, approval, and formal handover of the system.
7. **Ongoing Support:** Initiating the ongoing support and maintenance phase.

The project plan serves as a guideline for project management and execution, providing clarity on the project's progression and deliverable timelines.

14 Potential Risks, Assumptions, Dependencies, And Exclusions

14.1 Risk Identification:

- Documentation that outlines a wide range of potential risks that could affect the project.
- Clear identification of both internal and external risks.
- Prioritization of risks based on their potential impact and probability of occurrence.
- Descriptions of risks should be detailed, including their potential consequences on the project objectives.

14.2 Risk Mitigation Strategies:

- Detailed strategies to mitigate each identified risk.
- Evidence of proactive planning to reduce the impact or likelihood of risks occurring.
- Allocation of responsibilities for risk mitigation and clear action plans.

14.3 Assumptions and Dependencies:

- Clearly defined project assumptions and dependencies that might impact project deliverables or timelines.
- Evidence of a thorough analysis of these assumptions and dependencies.
- Contingency plans in case any assumptions fail, or dependencies are not met.

14.4 Exclusions:

- Explicitly stated project scope boundaries and what is not included in the project.
- Clear explanations of any exclusions and their potential impact on the project.
- Justification for why certain elements are excluded from the scope.

14.5 Communication and Monitoring:

Documentation on how risks will be communicated, monitored, and managed throughout the project lifecycle.

A plan for regular risk review meetings and adjustments to the risk management plan as necessary.

Evidence of a feedback loop where lessons learned from previous projects' risks are integrated into the current plan.

15 Acceptance, Acceptance Criteria & Acceptance Testing

15.1 Acceptance Testing:

- All deliverables supplied by the Service Provider will undergo acceptance testing.
- The University will verify compliance with the acceptance criteria.
- A test report will be generated, documenting the results of the acceptance testing.
- Any discrepancies or issues identified during testing will be reported to the Service Provider for resolution.

15.2 Acceptance Criteria:

The system will be considered accepted if it meets the following criteria, which include but are not limited to:

15.2.1 Physical Condition:

- All equipment must be free from any physical damage or defects upon delivery.

15.2.2 Configuration:

- The equipment will be configured as specified in project requirements.

15.2.3 Functionality:

- The equipment must perform its intended functions without errors or malfunctions, as outlined in the project specifications.

15.2.4 Compliance:

- The equipment shall comply with all relevant industry standards and regulations.

15.2.5 Documentation:

- All necessary user manuals, documentation, and licenses must be included with the equipment.
- Upon successful completion of the acceptance testing and resolution of any identified issues, the equipment will be formally accepted by the University.

16 Acceptance Period

16.1 Definition

The "Acceptance Period" refers to the duration during which the University shall review, test, and assess the Goods and Services provided by the selected Service Provider, as outlined in this Scope of Work (SOW).

16.2 Commencement and Duration

The Acceptance Period will commence immediately following the successful installation and setup of the projector system. It shall continue for a period of 30 calendar days from the commencement date.

16.3 Acceptance Testing

During the Acceptance Period, representatives of the University and the Service Provider 's technical team shall perform comprehensive evaluation and testing of the projector system to ensure alignment with the project's objectives, as specified in this SOW.

16.4 Evaluation Criteria

The evaluation criteria and standards during the Acceptance Period shall include, but not be limited to, the following aspects:

- Image quality
- Resolution
- Brightness
- Alignment with existing infrastructure
- Compatibility with specified requirements
- Adherence to relevant industry standards
- Auto alignment and calibration with error free edge blending
- Usability of real – time API (application programming interface) and addressability of graphics hardware.

16.5 Determination of Acceptance

Upon the successful completion of the Acceptance Period and after due consideration of the evaluation results, the University shall determine the acceptance of the projector system. If the Goods and Services meet the specified criteria and comply with the requirements set forth in this SOW, the University shall approve the deliverable(s) and formally acknowledge the acceptance of the projector system.

16.6 Issue Resolution

Should any discrepancies or issues arise during the acceptance testing, these shall be promptly reported to the Service Provider for resolution in accordance with the agreed-upon procedures outlined in this SOW.

17 Support And Maintenance

17.1 Maintenance Support:

- The Service Provider shall provide maintenance support and emergency maintenance for the first three years with the option to extend support for additional years at an additional cost.
- Technical support should be available via phone during extended business hours, 7 days a week, with response time details provided.
- Spare parts (e.g., special lamps) will be available for purchase, and there should be an extra projector in the event one fails.

17.2 Customer Support Portal:

The Service Provider must provide a dedicated customer support portal site that includes:

- The ability to open and track support requests (i.e., an online ticketing system).
- Release notes for the current software version.
- Release notes from historical software versions.
- User guides.
- Recorded training videos.
- Videos explaining specific tools or particularly relevant topics (e.g., webinars). The frequency of new additions should be specified.
- Support must be available to all users, with any limitations on contacting support clearly described (e.g., support contract payment requirements, designated contacts, etc.).
- The supplier must provide online or in-person support when required, ensuring maximum uptime.

17.3 Responsive Support:

- Support should be responsive to urgent needs. In case of a critical system component failure discovered after hours, the procedure for getting support and restoring the system into operation should be outlined.

18 Service Levels

18.1 Overview

This section outlines the expected service levels that the Service Provider is committed to delivering to ensure the optimal performance and quality of the digitalized Dome. The Service Levels specify the standards and metrics by which the Service Provider's performance will be measured and evaluated.

The Service Provider is expected to meet the following service levels for the full-dome digital system.

18.2 Performance Metrics

The following performance metrics are defined to gauge the quality-of-service delivery:

18.2.1 System Availability

- **Performance Standard:** The digital Dome system should be available for operation during scheduled operational hours.
- **Uptime Target:** The system should maintain a minimum uptime of 99.9% over each calendar month. Any planned maintenance that may result in downtime should be communicated to the University at least in advance. 2 weeks advance notice
- **Downtime Definition:** Downtime refers to the period during which the system is unavailable and cannot be utilized for its intended purposes.
- **Downtime Allowance:** The system should not experience unscheduled downtime exceeding one full day Downtime Allowance per calendar month. Scheduled maintenance activities, if any, should be communicated in advance.

- **Response Time:** The Service Provider is required to acknowledge and address any system downtime or outages promptly. Acknowledgment must occur within six (6) hours upon notification, and the resolution should be initiated immediately. The target resolution time for system outages is within six (6) hours dependent on complexity of issue.

18.2.2 Technical Support Response Time

- **Acknowledgment Time:** The Service Provider should acknowledge any support request within a timeframe of 4 to 6 hours during regular business hours.
- **Response Time:** The Service Provider commits to acknowledging and initiating technical support within 4 to 6 hours during extended business hours. This includes the initiation of support actions or troubleshooting steps.
- **Resolution Time:** For technical issues or support requests, the aim should be to resolve them efficiently. The Service Provider should strive to resolve requests within six (6) hours after acknowledgment during regular business hours. However, it's also advisable to specify that resolution times may vary based on the complexity of the issue. Some issues might require a longer resolution period, which should be agreed upon on a case-by-case basis.

18.2.3 After-Hours Support Framework

- **After-Hours Period:** The after-hours period is defined as times outside standard business hours, including evenings (e.g., after 6 PM SAST), weekends (from Friday evening to Monday morning), and recognized public holidays.
- **After-Hours Response Time:** The Service Provider is expected to adhere to an after-hours response time ranging between 6 to 12 hours. This response time accommodates reduced staffing or availability during non-business hours.
- **After-Hours Resolution Time:** During after-hours support, resolution time is expected to fall within a timeframe of 12 to 24 hours. Service provider should consider complexities that may arise, potentially delaying issue resolution compared to regular business hours.
- **Escalation Procedure:** Service Provider is required to outline a clear escalation process, including contact details for higher-tier support, on-call technicians, or management. This escalation path should specify the conditions warranting escalation.
- **Availability of Services:** Clarify the scope of services available during after-hours support. Emergency troubleshooting and critical issue resolution should be provided, while non-urgent inquiries may be deferred until regular business hours.
- **Communication Channels:** Specify the available communication channels for after-hours support, such as dedicated phone lines, email contacts, or a designated ticketing system. Clear instructions should be provided for issue reporting during non-business hours.
- **Customer Responsibilities:** Clearly outline customer responsibilities during after-hours support. This includes providing detailed issue information, prioritizing critical problems, or adhering to specific troubleshooting steps before seeking after-hours assistance.
- **Regular Review and Updates:** Service provider is expected to commit to regular reviews of after-hours support effectiveness and be open to adjusting the service level agreement as necessary to ensure alignment with both the bidder's capabilities and client needs.

18.2.4 Spare Parts Availability

- **Performance Standard:** The Service Provider is responsible for ensuring the availability of essential spare parts.

- **Spare Parts Availability:** The Service Provider should maintain a stock of spare parts necessary for system maintenance. Spare parts should be available for purchase by the University.

18.2.5 Emergency Support

- **Performance Standard**: The Service Provider will offer emergency support for critical system issues.
- **Emergency Support Contact:** Contact information for emergency support will be provided to University staff.
- **Response and Resolution Time:** Emergency support inquiries will receive priority response and swift resolution to minimize system downtime.

18.3 Reporting

The Service Provider shall provide regular reports outlining system performance, compliance with service levels, and any incidents or issues encountered. The reports should be delivered according to the following schedule:

- **Monthly Performance Reports:** These reports will be submitted to the University by the 25th day of each month, covering the previous month's performance, incidents, and any corrective actions taken.
- **Annual Performance Review:** An annual performance review will be conducted to comprehensively evaluate the Service Provider's performance, including an assessment of key performance metrics and areas for improvement. The University and the Service Provider will collaborate to set performance goals for the upcoming year.

18.4 Continuous Improvement

Both parties shall collaborate to identify areas of improvement in service delivery. The University reserves the right to audit and verify the Service Provider's adherence to the specified service levels at any time to ensure that services are delivered as agreed upon.