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Building a Sustainable Immersive Technology Ecosystem - A Statewide Model for Higher Education: Leveraging Immersive Technology for Educational Outcomes and Workforce Development

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Abstract. This presentation explores the development and implementation of a statewide immersive technology ecosystem across all of Wyoming's higher education institutions—the first initiative of its kind. The project demonstrates how a strategic, collaborative approach can address barriers to immersive technology adoption and drive educational innovation. By focusing on foundational components such as hardware access, faculty training, institutional support, and inter-institutional collaboration, the program aims to foster improved educational outcomes and workforce readiness.

A comprehensive landscape analysis, conducted through in-person visits to all nine institutions, identified early adopters, challenges, and areas for growth. This analysis led to the creation of a detailed strategy report and a scoring rubric to guide the distribution of $1.3 million in funding. More than 30 grant applications were reviewed, resulting in 17 awarded projects, including multi-institutional collaborations designed to maximize the program's reach and impact.

This presentation highlights the strategies employed to align immersive technology initiatives with Wyoming's economic and educational priorities, emphasizing key industries such as energy, tourism, and agriculture. Additionally, the session outlines lessons learned, challenges encountered, and best practices for building a sustainable, collaborative ecosystem that can serve as a scalable model for other states and institutions.

Attendees will gain insights into leveraging immersive technology for workforce development, expanding program visibility, and fostering meaningful stakeholder engagement to ensure long-term success.

Keywords: Immersive Technology, Higher Education Ecosystem, Workforce Development, SITE Framework, Continuous Improvement, Virtual Reality.

1 Introduction

This presentation details the first-of-its-kind statewide initiative aimed at building a sustainable immersive technology ecosystem across Wyoming's higher education institutions. The initiative systematically integrates immersive technology to enhance educational outcomes, workforce development, and economic growth. By addressing foundational elements such as hardware access, training, institutional support, and stakeholder engagement, the program establishes a blueprint for large-scale adoption. CM&D Consulting leveraged its Sustainable Immersive Technology Ecosystem (SITE) Framework, a model developed through years of experience in immersive technology implementation, to guide planning, funding, implementation, and optimization.

2 Project Overview

The Wyoming Innovation Partnership VR Project (WIP VR) is the first initiative to integrate immersive technology across all higher education institutions within a state. The project was designed to improve student

learning experiences, workforce readiness, and economic impact by equipping institutions with VR tools, faculty training, and sustainable implementation strategies.

A comprehensive landscape analysis was conducted, involving direct engagement with faculty, administrators, and IT professionals at each institution. This assessment identified key institutional champions, documented barriers to adoption, and informed a strategy for collaboration. The resulting statewide VR network promotes knowledge-sharing, shared resource allocation, and long-term sustainability.

Implementation focused on educator engagement, industry collaboration, and technical integration. Faculty received targeted training on immersive technology applications, while industry partners helped align VR tools with workforce needs. IT teams were supported to ensure VR infrastructure complied with cybersecurity protocols and learning management system (LMS) integrations. Pilot programs and iterative feedback loops further refined the implementation process, ensuring VR was not just acquired but effectively embedded in educational settings.

A key component of the initiative was the distribution of $1.3 million in funding through a competitive grant process. A custom scoring rubric was developed to align projects with Wyoming's educational and economic priorities. Seventeen projects were awarded funding, facilitating multi-institution collaborations, immersive curriculum development, and VR-based workforce training initiatives.

To measure success and ensure continuous optimization, the program follows a data-driven approach rooted in the SITE Framework. Quantitative and qualitative data from all 17 funded projects inform strategic adjustments, resource optimization, and expansion planning. By leveraging the SITE Framework, WIP VR establishes a replicable, scalable model for immersive technology adoption in higher education.

3 Key Components of a Sustainable Ecosystem

This project was developed using the SITE Framework, which provides a structured approach to large-scale immersive technology adoption. The framework ensures that implementation is strategic, scalable, and sustainable, focusing on key areas such as infrastructure, faculty support, curriculum integration, and data-driven decision-making. The core components of the SITE Framework include:

Technology Access & Infrastructure: Identifying, procuring, and managing immersive tools while ensuring IT compatibility.

Faculty Training & Support: Delivering targeted training and ongoing technical resources for educators.

Curriculum Integration: Embedding immersive technology into existing educational programs for enhanced learning outcomes.

Industry & Community Collaboration: Partnering with local businesses and institutions to align technology use with workforce needs.

Data-Driven Decision Making: Establishing key metrics and reporting frameworks to assess program success and scalability.

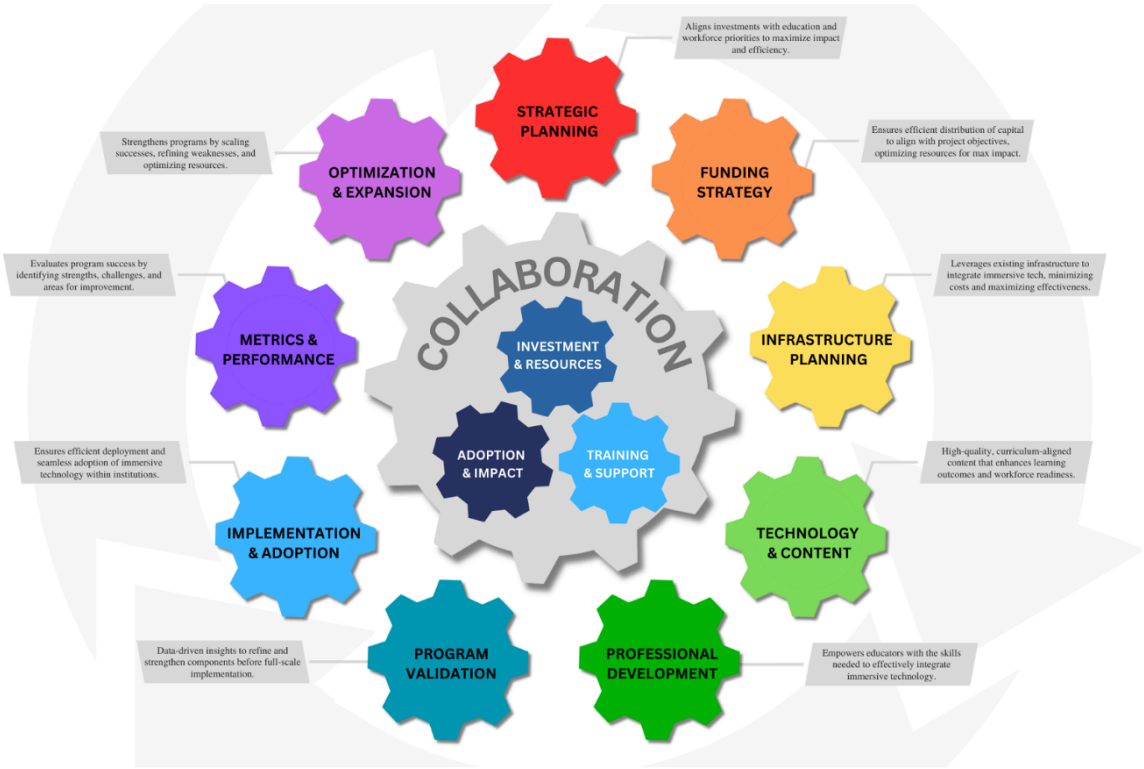

Fig. 1. Sustainable Immersive Technology Ecosystem (SITE) Framework.

4 Key Objectives of the Presentation

This presentation will provide attendees with a comprehensive roadmap for implementing sustainable immersive technology ecosystems within higher education. It will align with the SITE Framework, highlighting the strategic planning, funding, implementation, and optimization processes that contributed to the success of the Wyoming Innovation Partnership VR Project.

Technology Access & Infrastructure: Identifying, procuring, and managing immersive tools while ensuring IT compatibility.

Stakeholder Engagement & Institutional Buy-In: Presenting strategies for securing leadership and faculty support.

Funding Strategies & Resource Optimization: Explaining strategic allocation of the $1.3 million investment.

Measuring Success: Data-Driven Program Optimization: Highlighting performance tracking and real-world impact.

Overcoming Barriers & Lessons Learned: Discussing key challenges and solutions from the Wyoming initiative.

Creating Long-Term Sustainability & Expansion: Outlining strategies for scaling and maintaining immersive technology programs.

Expected Outcomes & Research Findings: Presenting initial research from the University of Wyoming on the educational impact of VR adoption.

This presentation will equip attendees with actionable insights, strategic models, and a roadmap to create their own immersive technology ecosystems, ensuring long-term success and measurable impact.

5 Presentation Format

The presentation will be structured as follows:

Introduction (5 minutes): Overview of the program's vision, goals, and timeline.

Program Development & Landscape Analysis (5 minutes): Discussion of the research and institution visits that informed the program strategy.

Grant Application Process (5 minutes): Explanation of the scoring rubric and funding distribution process, including examples of awarded projects.

Key Success Factors (10 minutes): Breakdown of the essential components of a sustainable immersive technology ecosystem.

Faculty Training & Ongoing Support (7 min): Discussion on the importance of professional development, faculty training programs, and continued technical support to sustain adoption.

Data-Driven Optimization (6 min): Overview of how collected data informs system improvements, continuous faculty engagement, and decision-making.

Program Impact (7 min): Discussion on the measurable impact of the initiative, key successes, and anticipated future developments in immersive technology adoption.

Q&A (15 min): Open discussion, allowing attendees to ask questions and engage in deeper conversation.
By sharing insights and strategic frameworks, this presentation serves as a roadmap for other states and institutions looking to build their own sustainable immersive technology ecosystems.

6 Program Impact

The WIP VR initiative has demonstrated a substantial impact, with $2.2 million in total investment generating an expected five-year ROI of $21.1 million and an estimated $2.5 million in tax revenue [1]. The program has expanded to include 36 immersive technology programs, impacting 105 courses and reaching over 3,375 students. Additionally, 5,000 employees have been trained in VR applications, leading to 199 expected new jobs [1]. Faculty training efforts have expanded significantly, with 410 educators trained across multiple disciplines. As a result, the WIP VR initiative has become the largest educational XR program in U.S. history.

7 Conclusion

This presentation will provide a comprehensive overview of Wyoming's immersive technology program, serving as a model for institutions and states aiming to build their own sustainable ecosystems. By sharing insights, strategies, and results, the session will empower attendees to leverage immersive technology for educational outcomes and workforce development. Additionally, it will emphasize how this model can be adapted for other regions or institutions, whether at the state, national, or notional level, highlighting the program's scalability and adaptability.

References

1. Van Sandt, A., Aadland, D.: Evaluating the ROI for the WIP Initiative. Center for Business and Economic Analysis (CBEA), Laramie, WY (2024).