Research Development Fund – FALL FY18 Application Template
SUBMISSION DEADLINE: *March 30, 2018 at 12 noon CDT* to rdf@tamu.edu
Applications that exceed page limits for any section or do not follow template will not be reviewed

Application Title: Centralized Virtual Reality and Simulation (VRS) Lab for Learning from the Past and Simulating the Future

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Key Participating Units: College of Engineering: Aerospace, Biomedical, Computer Science, Civil, Electrical, Engineering Technology & Industrial Distribution, Industrial & Systems Engineering, Ocean, Mechanical, Nuclear / **College of Architecture**: Architecture, Landscape Architecture and Urban Planning, Construction Science, Visualization / **College of Agriculture & Life Sciences**: Biological & Agricultural / **College of Education & Human Development**: Health & Kinesiology / **College of Geosciences**: Oceanography, Atmospheric Sciences / **College of Liberal Arts**: Psychology / **Centers**: Center for Infrastructure Renewal; TAMU Internet2 Technology Evaluation Center

Anticipated Request Amount ($): $1.5M

Executive summary of this application to utilize Research Development Funds:

The goal is to create the world's most advanced Virtual Reality and Simulation (VRS) Laboratory and open it to all faculty and researchers of the TAMU system and industry partners.

It is becoming increasingly clear that advanced Virtual Reality and Simulation (VRS) technologies enable us to better understand complex physical phenomena thereby extending our knowledge in engineering, architectural, agricultural, education, medical and social sciences. However, VRS technologies require considerable initial investment and continuous upgrading as they are evolving almost every day. In order to facilitate industry partners and researchers from the diverse colleges at TAMU to utilize cutting-edge VRS technologies in their work, it would be more reasonable to build a centralized VRS facility and share the resource.

The requested funds will be used to purchase and install state-of-the-art Virtual Reality and Simulation devices that can be easily applied and shared across disciplines. More specifically, a HIVE (Highly Immersive Virtual Environment) system will be built in a way that multiple users can observe a Virtual Reality model in the same space at the same time. Also, Omni Directional Treadmills (ODT) equipped with Head Mounted Displays (HMD) will enable users to integrate within the HIVE system. If allowed, the VRS unit will be installed in a 3,000-square foot space at the Center for Infrastructure Renewal (CIR) building on the RELLIS campus.

The VRS lab will enable researchers at TAMU to secure external research funding in the engineering, architectural, agricultural, education, medical and social sciences where VRS technology can help them visualize any past events that took place in a space we can no longer visit and learn some lessons from analyzing what went wrong, or predict how today's decisions will change the future. For example, the VRS lab can be used to figure out the best strategy for decommissioning and demolishing old nuclear power plants in the U.S. or to simulate how the smart city will function in 2050.