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Digital Twin Initiative

- **VISION**: To have UCF lead the U.S.’ global competitive advantage of innovative digital transformation by fostering collaboration across academia, industry, military and government towards the development of an integrated ecosystem of digital/physical twins, data, models, simulation, and analysis of systems’ life cycle in a multi-domain environment.

- **Proposal Summary**: Establishing UCF as the academic leader for US’ digital transformation addressing the new challenges of rapid and disruptive innovation capitalizing on UCF’s M&S foundations and strengths to develop new collaboration and partnership paradigms to launch and scale research and business ventures. This requires defining a new campus-wide framework for innovation centered around a strategic emerging technology, Digital Twin, little explored in academic settings. We propose a campus-wide innovative, integrative, inclusive, and inspiring Digital Twin framework, that will enable us to intersect research and academics with industry and government partnerships to create transformative ventures with real-world impact.
Research Strategy

- **Applied Research Focus with supportive Foundational Research:**
  - Cycle of Design – Build – Deploy – Sustain
  - Accelerated decision making
  - Enhanced communications among teams

- **Multi-disciplinary:**
  - Large-scale transformative ventures

- **Cross business sectors/domains:**
  - Industry/government collaboration to drive standards, workflows and new technologies
  - Optimize the role of higher education in the emerging innovation landscape, enabling the generation and adoption of new technology at a pace that will keep America competitive

- **Research to Market approach**
  - Research results driving product solutions and specialized workforce
  - Innovative tech-transfer and commercialization pathways
**Management & Advisory Structure**

**DT Steering Committee**
- Dr. G. Bochenek (Co-Chair)
- Dr. C. Cruz-Neira (Co-Chair)
- Dr. D. Beidel
- Dr. M. Aty
- Dr. R. Azevedo

- Cross-University management structure
- Distribute & manage funds equitably
- Form faculty teams responsible for responding to large collaborative funding and partnership opportunities
- Provide guidance for campus-wide DT academic track

**DT Deans Advisory Board**
- Dr. M. Georgiopoulos (CECS Dean)
- Dr. L. Klonoff (COGS Dean)
- Dr. M. Tomova (COS Dean)
- Dr. Y. Wang (COH Dean)

- Quarterly Advisory Meeting

**DT Industry Advisory Board**
- Members TBD

- Semi-annual Meeting

**DT Core Research/Technology Area**

**DT Core Research**
- Dr. G. Bochenek, Co-Lead
- Dr. C. Cruz-Neira, Co-Lead
- Dr. R. Azevedo

**Applied Research Focus Areas**

**Behavioral Healthcare Research**
- Dr. D. Beidel, Lead
- Dr. R. Azevedo

**Transportation & Smart City Research**
- Dr. M. Aty, Lead

**Defense Research**
- Dr. G. Bochenek, Lead

**DT-UFC Liaisons**
- Dr. M. Aty, AI
- Dr. G. Bochenek, Microgrid

- Coordination
Achieving the Goal

- Faculty Hires, search starting fall 2022/spring 2023:
  - 3 new positions for the School of Modeling, Simulation and Training
  - 3 positions for the College of Engineering and Computer Science

- Flagship Living Lab Projects: visionary projects:
  - Transportation and Smart Cities: UCF Digital Twin Living Lab
  - Defense: Next Generation Soldier-Ground Vehicle Interface Design: Human Digital Twins
  - Behavioral Health Care Research: Development of digital twins of existing traumatic scenarios or relaxing spaces

- Targeted Workshops to develop strategy and identify partnerships
  - Strategic expertise needs driving faculty hires
  - Identify lab space and equipment needs
  - Determine near-term opportunities and teams for immediate impact
  - Select strategic partners
On-Going Efforts

- Osceola County Coalition - Microelectronics Digital Twin
- USSF Digital Twin
  - Support Multi-domain operations, test and evaluations
- Next Generation Soldier-Ground Vehicle Interface Design: Human Digital Twin
  - AI enabled capabilities, Soldier-Machine Interface
- Classified Digital Twin Efforts
  - Full range of research associated with classified Network, data & data management, simulation/analysis, interoperability & standards, and digital engineering
- Digital Twin Data Pipeline
  - Data flow interoperability for multi-domain utilization
- Other: Airport of the Future, Smart Cities, Energy Infrastructure
Discussion

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