Request for Information on the National Digital Twins R&D Strategic Plan

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Via FDMS

R. Rodulfo, 7/6/2024

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Digital Twin Smart City Case Study City of Coral Gables, FL Digital Twin smart city public platform - strategic planning, engineering, design, community impact: The Coral Gables smart city Digital Twin platform (https://www.coralgables.com/digitaltwin) was engineered in house by the City of Coral Gables Innovation & Technology team (CGIT), as part of our strategic plans and ongoing R&D and innovation operations. The first version (v1) went live in 2021. There was no additional funding requested/required for this project. The CDT project is aligned with our strategic action plans, specifically with our Innovation & Technology Strategic Action Plan 4.1-1 (City Goal 4) – Citywide Horizontal Integration of Enterprise Systems and Dashboards: https://issuu.com/cgit/docs/cgitstrategicplan/26 The homegrown digital twin platform (Smart City OS) merges the Coral Gables Smart City Hub public platform (https://www.coralgables.com/smartcityhub) launched in 2018, the City's Urban Analytics Artificial Intelligence (AI) Internet of Things (IoT) platform, citywide enterprise systems and open data, and a 3D horizontal integration spatial computing platform. This architecture fosters interoperability in real time and connects the dots between all the city's enterprise systems and data domains to improve operational efficiencies and citizen access to digital services. It also allows for integration with building information models and immersive virtual reality user experience navigation for operations, inspections, monitoring, and control. The platform is widely used by city departments (Innovation & Technology, Public Works, Public Safety, Police, Fire, Emergency Management and EOC, Historical Resources & Cultural Arts, Development Services / Building/Planning & Zoning), by traffic engineers, environmental analysts, urban planners, city officials and decisionmakers, etc., and by university and school researchers and students (UM, FIU, MDC, UC Berkeley, and others), and referenced by scientific research institutions (NIST, PNNL, CDG, CTI, and others.) Our smart city digital twin started as a concept around 2013 when we published a paper to help our team to identify the urban computing knowledge foundations and engineering standards that we could leverage at that time to embark on a smart city roadmap, aggregating research from IEEE, academia, and the industry. This was the last update of that early document: https://issuu.com/cgit/docs/cgitsmartstories/202 - https://drive.google.com/file/d/1gn2vUx0VLBZGjBoiIo3HhEitcgFao0oH/view Our digital twin concept matured into a systems engineering horizontal integration interoperability model paradigm and a smart city engineering framework presentation layer in our innovation and technology strategic plan, first published in 2016: https://www.coralgables.com/itstrategicplan In our strategic plan, the digital twin is a subset of the Smart City Hub layer of the Coral Gables Smart City Engineering Framework (https://issuu.com/cgit/docs/cgitstrategicplan/47), and its topology is defined by Framework # 5 of our Smart City Engineering Framework Architecture, also introduced in the strategic plan: https://issuu.com/cgit/docs/cgitstrategicplan/42 - https://issuu.com/cgit/docs/cgitstrategicplan/48 All those documents and public platforms are available in our Smart City Digital Library: https://www.coralgables.com/itdocs Additionally, these stories in our innovation & technology bulletin explain more about our smart city digital twin platform: First time we presented the prototype version to the public, at a smart city conference in University of Miami: https://issuu.com/cgit/docs/cgitsmartstories/92 Digital Twin Public Launch

(v1): https://issuu.com/cgit/docs/cgitsmartstories/87 Digital Twin Presentation with NIST: https://issuu.com/cgit/docs/cgitsmartstories/79 Digital Twin Presentation to City Commission and city officials and residents: https://issuu.com/cgit/docs/cgitsmartstories/71 Media article: https://issuu.com/cgit/docs/cgitsmartstories/59 Harvard library publication: https://issuu.com/cgit/docs/cgitsmartstories/56 Digital Twin Project Award: https://issuu.com/cgit/docs/cgitsmartstories/41 Digital Twin Platform Redesign (v2) launch with advanced photogrammetry and IoT integrations: https://issuu.com/cgit/docs/cgitsmartstories/25