Single Sign On Design Simulations: Using Virtual and Live Humans

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ABSTRACT

Both commercial and defense communications require a universal, secure, easy and rapid Single Sign-On (SSO) experience for multiple platforms. Instantiations of effective and secure service capability after either natural disasters or cyber attacks are vital for society. Before resorting to a major redesign of SSO, which is a potentially disruptive evolution, simulation could be used to evaluate efficacy, interoperability and security. Emerging technologies in Artificial Intelligence may facilitate or enhance these processes, providing a dynamic, non-deterministic security barrier to intrusion. Today, different solutions exist for different platforms. A plethora of Identity Providers (IdP's) are managing credentials via with ranges of choices of incompatible tools for implementing SSO. This paper asserts that a new solution should be implemented with cross-platform flexibility. Also, this new paradigm should be designed to be easier to deploy today and to re-establish network communications after network failure. These changes would dramatically reduce amount of work system administrators need to do to "onboard" users or to terminate them. This would directly translate to financial benefits and time savings. This solution would also increase security, as passwords are less likely to be reused, and centralized login flows, e.g. multi-factor authentication and biometric identification, can be instituted easily and without undue burdens. Without widespread adoption, creating a new standard for SSO would prove problematic. This solution can and must leverage existing platforms and allow for easy adoption, so it can easily gain the required adoption. When a user or service member can log onto every system that they need and verify their identity with a single account, the benefits will have been realized. This paper presents how emerging technology will enable improved network and user interface simulations allowing for improved evaluations of time economies, security improvements, network recoveries and even user appreciation.

ABOUT THE AUTHORS

Mark C. Davis, Ph.D. is the Chief Technical Officer at Wood Duck Research, Inc, and is semi retired after careers in the US Navy and as a computer design engineer for both IBM and Lenovo. Rising to the level of Distinguished Engineer at Lenovo, he was responsible for the design of laptop computer cross.disciplinary technology, including PC architecture, embedded systems, open source and virtualization. Previous work was with IBM in the areas of software development and architecture involving security, storage and virtualization. Dr. Davis has been granted well over fifty patents that were filed during his service at both companies. He is a graduate of the Duke University NROTC program and was commissioned as an Ensign, attended nuclear power school, and served as a Submarine Officer for twelve years, including one duty tour as a classroom instructor. He left the active duty as a Lieutenant Commander to pursue a PhD. Mark holds a BSEE degree from Duke University and a PhD in Computer Science from the University of North Carolina, Chapel Hill, where his advisor was Professor Fredrick P. Books.

Daniel Budziwojski is a Research Assistant at the University of Southern California and is currently researching the integration of virtual humans into the learning environment to increase user engagement and retention through building long term learning solutions. In the San Francisco Bay Area, he has been exposed to the vast technological development over the years which became the motivating force to pursue his career. In 2015, Daniel fused his computer science interest with a personal passion of his to found an e-commerce company that differentiates itself from the competition by utilizing the latest technology to improve in the fields of inventory management, fulfillment times, and logistics. As a result, he seeks ways to improve both business software and its relationship with human agents**.** Daniel is currently a student in the Computer Science Department of the University of Southern California.

Dan M. Davis is active as a consultant at the Institute for Creative Technologies, University of Southern California (USC), focusing on large-scale DoD simulations and avatar uses. Prior to retirement, he was the Director of the JESPP project at USC for a decade. As the Assistant Director of Advanced Computing Research at Caltech, he ran Synthetic Forces Express, bringing HPC to DoD simulations. He also served as a Director at the Maui High Performance Computing Center and in computer research roles at the Jet Propulsion Laboratory and Martin Marietta. He

was the Chairman of the Coalition of Academic Supercomputing Centers and has taught at the undergraduate and graduate levels. As early as 1971, Dan was writing programs in FORTRAN on one of Seymour Cray's CDC 6500's. While in the Marine Corps, he saw duty in Vietnam as a Cryptologist and retired in 2002 as a Commander, U.S.N. He received B.A. and J.D. degrees from the University of Colorado in Boulder.