# Jump ARCHES

A Jump Simulation Case Study

## THE OPPORTUNITY

Before Jump Trading Simulation & Education Center officially opened its doors, its leaders were determined the facility would focus not just on simulation in education and research, but it would be a hub for clinicians, engineers and students to innovate the future of health care. A novel concept for a simulation center, engineers across the country were typically developing methods, devices and technology to improve medical training and health care delivery without the input of clinicians or health care facilities, leading to projects that weren't ready to be implemented in the health care setting.


## THE SOLUTION

In 2013, Jump Simulation hired a small team of engineers who could collaborate with clinicians throughout OSF HealthCare and University of Illinois College of Medicine Peoria on developing devices to help train new and tenured clinicians as well as other solutions to transform health care. The success of the solutions developed led to an expansion of this work in 2014 with the creation of the Jump Applied Research for Community Health through Engineering and Simulation, or Jump ARCHES, endowment program, a collaboration between OSF HealthCare and University of Illinois College of Engineering. The endowment funds projects between OSF HealthCare clinicians and engineers at the U of I working to find new solutions to commonly known health care issues and problems.

## THE IMPACT

Through the Jump ARCHES program, OSF HealthCare and U of I have been able to demonstrate the benefits of merging clinicians with engineers to hypothesize, test and redesign tools, techniques and processes used by caregivers every day. Twenty-four projects have been awarded Jump ARCHES funding since the program's inception. In 2018 one project was commercialized, two have gone on to receive national recognition through funding from the National Science Foundation and the Carver Charitable Trust, five patents have been filed and 12 articles have been published in various journals. Some ARCHES projects have also gone on to be further funded by donors, including Ed and Ann Rapp and William Shepard.

## JUMP SIMULATION

Jump Simulation, a part of OSF Innovation, is one of the world's largest simulation and innovation centers with the Vision of improving outcomes and reducing costs through excellent training. For more information, visit www.jumpsimulation.org.

## OSF INNOVATION

Launched in 2016, OSF Innovation is the overall umbrella initiative for the planning, structure, goals and services OSF HealthCare uses to innovate for the improvement and transformation of health care.

## BRIDGING A GAP BETWEEN CLINICIANS AND ENGINEERS

Before Jump Trading Simulation & Education Center, a part of OSF Innovation, opened in 2013, its Vice President and Chief Medical Officer, Dr. John Vozenilek, had a vision. That was to not only create a world-class simulation and education center but to bring clinicians, engineers and students together to solve commonly known health care problems.

Engineers typically came up with what they believed were relevant processes, devices or technologies for health care without the advice of those in the clinical space. Likewise, if doctors and nurses identified problems or thought of new ways to diagnose and treat patients, they didn't have anyone to help them develop their ideas.

"Pairing engineers with clinicians in the early days of Jump produced immediate results," said Vozenilek. "These small teams were asking important questions and answering them with simulation techniques that could help us redesign our approach in care delivery."

What came out of that first year of Jump were multiple simulation task trainers to better train medical professionals and the redesign of devices and processes used in clinical practice.

## FINDING LIKE-MINDED PARTNERS

Dr. Vozenilek found a talented partner in Thenkurussa Kesavadas, Ph.D, Director of the Health Care Engineering Systems Center at the University of Illinois Urbana-Champaign, who also saw the potential of engineers collaborating with medical professionals to develop ideas that could truly impact health care for the better.

"The U of I College of Engineering, in the past, had produced some really great scientists, faculty and students who have looked at the engineering aspect of health care," said Kesavadas. "What was lacking was the ability to be immersed in the real world type applications you see when you walk into a hospital or clinic."

Thanks to the DiSomma Family Foundation, which also saw the value of this collaborative approach to solving health care problems, Jump and the U of I in 2014 joined forces to create the Jump Applied Research for Community Health through Engineering and Simulation, or Jump ARCHES, endowment program. The $62.5 million fund provides much-needed funding to multidisciplinary teams developing new tools, devices or processes to enhance clinical outcomes, simulation and education.

Teams are expected to focus on important problems in health care with the goal of advancing scientific knowledge or clinical practice. Their ideas should challenge existing education models or clinical practice, address critical barriers to progress in the field and employ novel approaches to positively impact patient and learner outcomes.

## EXPLORING POSSIBILITIES

The Jump ARCHES program has been popular, with nearly 100 projects submitted for approval and 24 awarded funding since its inception. These projects are continually showcased at the annual Health Care Engineering Systems Symposium that takes place at both the UIUC and at Jump in Peoria with a goal of inspiring other teams of engineers and clinicians to develop health care solutions. Jump ARCHES leaders would also like to see teams partner with entrepreneurs who understand how to bring different ideas to market, expanding the ability of OSF Innovation to transform health care.

*"Encouraging our clinicians to work with engineers and other faculty at the U of I has led to the development of extraordinary projects, some of which are already making a difference in medical education and how we deliver care. This includes creating software that allows clinical educators to build lectures in virtual reality and building an interactive, mobile application to help patients with heart failure manage their condition."*

– JOHN VOZENILEK, MD, VICE PRESIDENT AND CHIEF MEDICAL OFFICER FOR JUMP SIMULATION

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