



## Inventors

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## Intellectual Property

### **Status:**

*Patent Pending*

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## STHA: Spatio-Temporal Hybrid Automata

AzTE Case # M13-144P

### **Background**

Delivery of critical healthcare such as drug delivery and chemotherapy by TeleHealth applications has grown into over a \$3.1 billion industry annually. Unfortunately, these devices are prone to software failures, which can have grave consequences that include loss of life. Cyber-Physical Systems (CPSes) devices are regulated by the Food and Drug Administration (FDA). As a result of their potential risks to human health and safety, the FDA has imposed strict regulations on certification and marketing for these devices. Certification is a long and costly process, which lengthens the amount of time required for new innovations to get to market. Testing new innovations can be a long and cumbersome process as well. New methods are needed to speed the testing processes that provide better data, therefore aiding in certification.

### **Invention Description**

Researchers at Arizona State University have developed new software for testing CPSes devices. The program provides formal verification that theoretically proves the equipment operates safely. This innovation speeds up and improves equipment testing by allowing for more rigorous regiments in less time than conventional testing methods. The resulting data builds a more complete case for certifiers to review, thus speeding the testing and FDA certification process.

### **Potential Applications**

- Testing mobile health-care devices
- Developing data for FDA certification

### **Benefits and Advantages**

- **Lower Costs** – Allows innovators to get new ideas to market quickly.
- **More Accurate** – Provides higher quality assurances that medical devices are safe.
- **Retrofit** – This software can provide models for existing devices and new innovations.