

## Semi-Autonomous Robotic Surgery for Remote Environments

### SES Team Selected to Present Robotic Surgery Software Technology at NASA iTech Event



COLORADO SPRINGS, CO (April 11, 2019) - Our colleagues Dr. Grant Schaffner and Matt Sanders were one of only 10 teams selected to present their "Autonomous Robotic Surgery for Remote Environments" concept to a panel of NASA technologists and industry experts at the NASA iTech - Ignite the Night event. They presented an overview of the software technology they have developed, in conjunction with Christopher Korte from the University

of Cincinnati, that allows surgeons to train a robot to semi-autonomously perform surgical procedures using long short-term memory recurrent neural networks and received very favorable feedback from the judges and audience. Click [here](#) to view a video recording of Matt's presentation.

## In Silico Methods - Computational Modeling and Simulations for Combination Product Development

Join Anup Paul, Ph.D., P.E., Senior Associate at Stress Engineering Services, Inc., for a technical presentation at [Inhalation Drug Delivery Systems 2019](#).

May 28, 2019, 3:20 PM | Boston, MA

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### Abstract

Computational Modeling and Simulations (CM&S), i.e. *in silico* methods, can be used throughout the device lifecycle supporting discovery, ideation, product design, reliability assessment, manufacturing process, and failure investigation activities. In this presentation, we discuss the evaluation of a Dry Powder Inhaler (DPI) product using CM&S methods. Computational modeling can be applied to assess the capability of the DPI design to maximize the drug dose per inhalation and minimize the dose-to-dose variations. Additional simulations can evaluate the reliability of mechanical systems like dose counters and also manufacturing processes. The design can be evaluated for the range of design and use variables, thus ensuring a robust design even before prototypes are generated for testing.

As the reliance on computational models increases, there is a need to ensure that the models represent a credible approximation of reality. *In silico* data obtained from credible models can be leveraged for regulatory submissions. The recently published American Society of Mechanical Engineers (ASME) V&V 40 standard provides procedures to standardize the verification, validation, and uncertainty quantification (VVUQ) necessary to demonstrate the credibility of computational models for medical devices. Data obtained from physical testing is necessary to define adequate inputs to the model and to validate the outputs.

This presentation will use case studies to focus on the following points:

- Application of *in silico* methods for development of combination products for inhaled therapies
- Leveraging test methods to obtain data for model input and verification/validation of outputs
- Overview of the ASME V&V 40 standard for computational modeling of medical devices
- Leveraging *in silico* data for regulatory submissions

## Upcoming Events

### BIOMEDevice

May 15-16, 2019 | Boston, MA

**Booth #560**

**Contact Erin** to set-up a meeting while at the show!

The banner features the BIOMEDevice logo (An MD&M Event) on the left. The main text reads 'MAY 15-16, 2019 // BOSTON, MA' and 'BOSTON CONVENTION & EXHIBITION CENTER'. Below this is the Stress Engineering Services Inc. logo and name. To the right, it says 'Visit us at booth #560'. At the bottom left, it offers a free expo pass and 20% off conference pricing with code 'SPECIALSTR2'. At the bottom right, it provides the URL 'BIOMEDboston.com/SPECIAL' with a right-pointing arrow.

### MD&M East

June 11-13, 2019, 3:20 PM | New York City, NY

**Booth #751**

Use promo code SPECIALSTR4 when you register for a free expo pass!

## Missed our latest newsletter?

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To learn more about Stress Engineering Services Inc., visit our [website](#)  
or contact us at 513-336-6701.

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