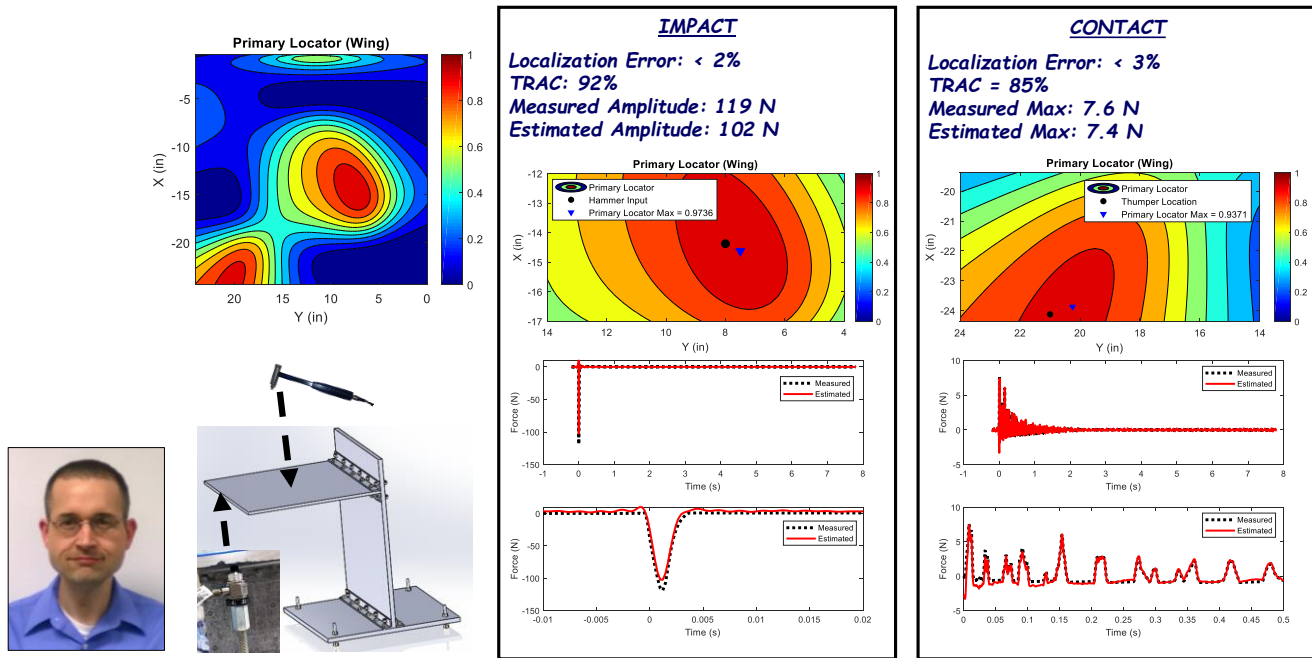


## Localization and Characterization of Contact Forces



Quantification of operating loads is often approached as an inverse process using vibration response data and some form of system model. Modeling error is generally present to some degree and may also result from unmodeled system changes as well as nonlinear behavior. The inverse process can cause small errors to become significantly amplified, thus distorting the reconstructed input force. However, if the changes in system behavior are of interest, then those changes may be characterized through force reconstruction as equivalent loads acting in conjunction with the original external inputs. In this research, experimental response data is acquired from a test structure where an unmodeled contact nonlinearity exists. Force reconstruction is performed to locate and characterize the initial impact force as well as the additional contact forces.