

# Fall Technical Conference

Statistics: Powering a Revolution in Quality Improvement

October 4 - 6, 2017 | Philadelphia, PA



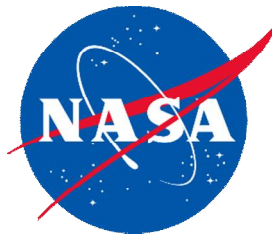
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## A Panel Discussion on Collaboration: Increasing the Likelihood of Success

Willis Jensen


Peter Parker

Jen Van Mullekom



# Panel Goals for Cross Organizational Collaboration

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- Share thoughts on the importance of collaboration
  - Provide examples of successful collaboration efforts
  - Discuss challenges in collaboration between industry, government and academia
  - Exchange best practices for fostering collaboration
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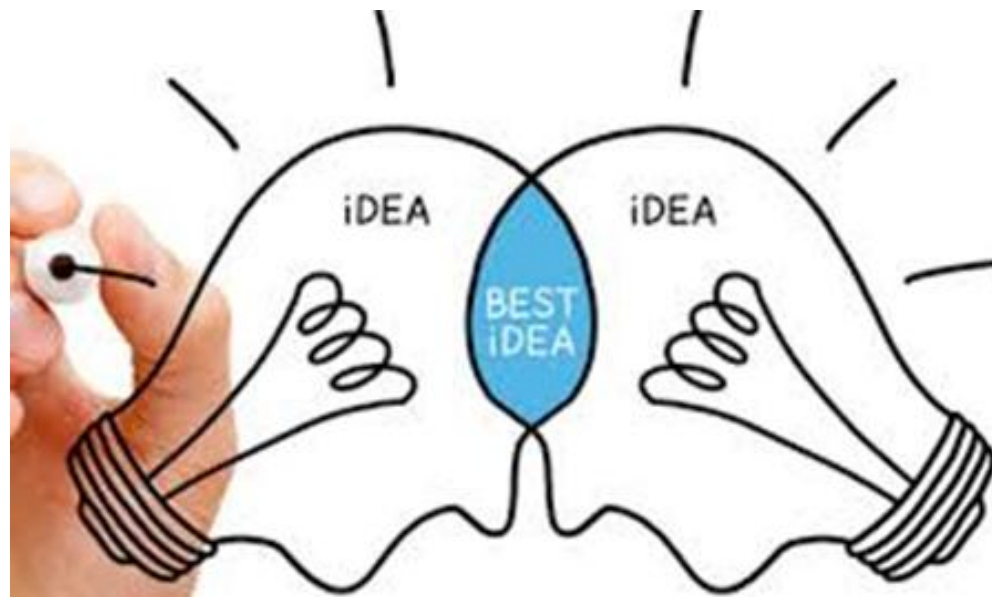
# Why Cross Organizational Collaboration?

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# Distinguishing collaboration from other types of teamwork

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# A Collaboration between and

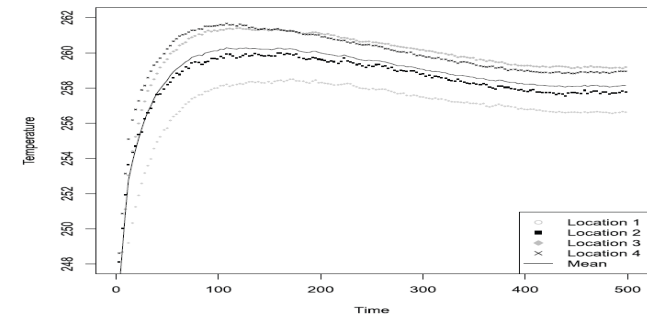
Problem: No monitoring of oven temperatures because of high data volume (more than 1,000 runs with 4 profiles and 150+ measurements for each profile)

Goal: Determine best analysis and control charting approach that could be implemented

Challenges: Low interest from academia, confidentiality of data and full business results, no recognition or reward for problem statement

Outcome: JQT Paper with raw data provided as supplemental materials, JMP script

Keys to success: Persistence, data transformations, suppression of details, case study focus, use subject matter expert, communication technology (web sharing, virtual collaboration)



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## CASE STUDIES

*Edited by Stefan Steiner*

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### Nonlinear Profile Monitoring for Oven-Temperature Data

WILLIS A. JENSEN

*W.L. Gore & Associates, Inc., Flagstaff, Arizona*

SCOTT D. GRIMSHAW

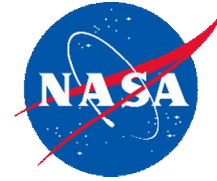
*Brigham Young University, Provo, Utah*

BEN ESPEN

*W.L. Gore & Associates, Inc., Flagstaff, Arizona*

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# A Collaboration Government, Industry, Academia



Problem: Develop and integrate an experimental design strategy involving multi-dimensional calibration, destructive testing, split-plot structure, near replicates

Goal: Provide measurements of rocket generated roll torque with defendable uncertainty

Challenges: Introducing/persuading industry partner to DOE/RSM, facility and test conditions straining available statistical methods, yet needing an immediate solution

Outcome: Successfully measured quantity of interest, training short-courses (academia to industry), multi-dimensional calibration uncertainty interval JQT paper, strategy for near replicates FTC presentation

Keys to success: Communication and translation of statistical ideas into users language, developing immediate solutions that defined and spurred more rigorous statistical research



## The Prediction Properties of Classical and Inverse Regression for the Simple Linear Calibration Problem

PETER A. PARKER

*National Aeronautics and Space Administration, Hampton, Virginia 23681*

G. GEOFFREY VINING

*Virginia Tech, Blacksburg, Virginia 24061*

SARA R. WILSON

*National Aeronautics and Space Administration, Hampton, Virginia 23681*

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*Virginia Tech, Blacksburg, VA 24061-0439*

61<sup>st</sup> ASQ/ASA Fall Technical Conference  
October 5-6, 2017, Philadelphia, PA

**Strategies for Near Replicates in Response Surface Analysis**

**Peter Parker**

*National Aeronautics and Space Administration*

**Thomas Bzik**

*Statistical Consultant*

# A Collaboration between DuPont and VT

Goal: Develop new analysis and design methods for testing material reliability

Outcome: A Young Professor Grant, student sponsorship, two papers, and book chapters, 2016 SPES Award

Challenges: Legal agreement delays, inability to reference actual application, at the whim of business priorities, “publishability” of future test results based on successful outcome, data transfer

Keys to success: Patience, perseverance, compromise, knowledge of legal process, relationship of statistics to legal process



## Problem:

2 Models, No Propagation of Error  
Inflexible Functional Form  
No Estimation of Uncertainty



## Solution:

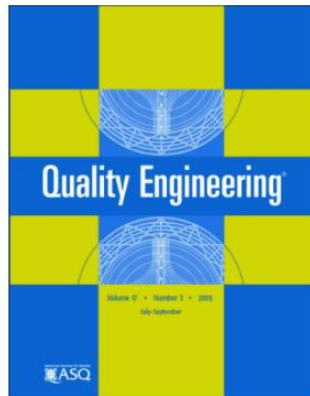
One Model  
Flexible Form  
Estimation of Uncertainty

# Fostering Collaboration with a new QE Column

## Quality Engineering

Submit your problems within the industrial statistics community

Print Email Tweet Share



Are you a practitioner of industrial statistics?

Can you think of a problem within the industrial statistics community?

As part of our new dedicated column within the *Quality Engineering* journal we will be looking at the issues you face within industrial statistics. Solutions will then be published as regular articles with the wider aim of improving collaboration between the industry and academia.

Would you like the industry to help solve your problems in industrial statistics? Then send us your problems, and they may be included in our dedicated open access column!

### Motivation:

Industrial statistics research motivated by real-world problems and based on real data is extremely valuable, but relatively rare.

## Column Editors



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# Questions for the Panel?



# Questions for Our Audience

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- Have you participated in a cross-organizational collaboration? Would you share your experience? What made it successful?
- If you haven't, what has discouraged you?
- What ideas do you have to foster cross-organizational collaboration?

## Questions for panel

- What kinds of problems make for good collaboration problems?

