



**The IEEE Reliability Society  
Joint Section Chapter: Boston - New Hampshire - Providence  
May 2022**

<http://www.ieee.org/bostonrel>

**Welcome to the Boston Chapter Newsletter:**

We are pleased to share the summary of two meetings in March and May. While we miss the in-person networking, on-line applications have allowed the IEEE Reliability community to gather virtually with subject matter experts to converse about applications and solutions.

If you are interested in presenting at a monthly meeting, being adding to the meeting notifications, or attending in an AdCom meeting, send an e-mail to Mike Bannan, Chair [michael.bannan@ieee.org](mailto:michael.bannan@ieee.org) or Jay Yakura, Vice Chair [james.yakura@ieee.org](mailto:james.yakura@ieee.org). The next committee meeting is planned for September 6, 2022. We are always working to fill the calendar with fresh reliability presentations months in advance. You may find URL links to all the meetings on <https://events.vtools.ieee.org>, - search for region 1, section Boston, CH01021. The core team of volunteers help us keep things going, but there is ample opportunity for new members to participate in the Advisory Committee.

**Meeting Highlights:**

**March 9, 2022: "CORRECTION TO TRADITIONAL FORMULAE FOR RELIABILITY ESTIMATION AND QUALITY SAMPLING REQUIREMENTS"**

Dr. Charles H. Recchia, AMD  
52 participants, 18 were IEEE members and 34 were guests

The Chi-squared formula has traditionally been used to estimate the confidence intervals around failure rates and in selecting reliability test sample sizes.

In this presentation, Dr. Recchia discussed the use of the Gamma distribution using the neutral Kerman prior in preference to the traditional Chi-squared based approach, to achieve more accurate predictions especially on experiments with low failure counts. He showed the simple changes in the new formulae and how they can be used for various confidence levels for failure rates and test sample sizes.

This presentation was based on one presented at the 2021 IEEE International Integrated Reliability Workshop conference. Please also see:

"Correction to Faulty Traditional Unintentionally Bayesian Formula for Device Reliability Estimation", IEEE TRANSACTION ON DEVICE AND MATERIAL RELIABILITY, VOL. 99, NO. 99, DECEMBER 2021, Charles H. Recchia, Mark A. Bachman, Peter Erslund, Joseph Merola.

## May 11, 2022: "LIGHTNING-FAST RELIABILITY ENGINEERING"

Adam Bahret, Apex Ridge Reliability Consulting  
39 participants, 12 were IEEE members and 27 were guests

A comprehensive reliability engineering program for a new product is a large investment. He recommends using "Time to Reliability" as a metric to engage the team throughout the full development process.

To understand reliability targets he asks three critical questions for the Bathtub Curve of Instantaneous Failure Rate versus Time:

1. How high is the line?
2. How do we get it lower?
3. When does wear-out happen?

Focusing on efficiency and speed to create a highly reliable product, use HALT (highly Accelerated Life Test), ALT, (Accelerated Life Test) and RG (Reliability Growth) to discover design weaknesses, allow for faster learning curves, and implement corrective actions to improve product robustness.

Adam shared two case studies emphasizing the importance of effective summary infographics for communication of reliability goals and testing performance. They included plots of test results over time and identified Root Cause and Corrective Actions (RCCAs) using "Five Whys?" for every failure mode found during testing. Testing included internal and external use conditions with alpha or beta designs and continued testing after patching in repairs.

## Upcoming Activities

### Advisory Committee Meetings:

Future AdCom meetings are planned for September 6, and October 18, 2022. Contact Mike or Jay for a link to join the meetings.

Additional presentations have not been scheduled as of this newsletter, but September 14 and October 12, 2022 are target dates.

## Advisory Committee (AdCom) Members 2021

Chair: Mike Bannan – BAE Systems - [michael.bannan@ieee.org](mailto:michael.bannan@ieee.org)  
Vice Chair: Jay Yakura – Retired [james.yakura@ieee.org](mailto:james.yakura@ieee.org)  
Secretary: Don Markuson - Silicon Labs [d.markuson@ieee.org](mailto:d.markuson@ieee.org)  
Treasurer: Don Markuson - Silicon Labs [d.markuson@ieee.org](mailto:d.markuson@ieee.org)  
Website: James A. Yakura – Student - [james.a.yakura@ieee.org](mailto:james.a.yakura@ieee.org)  
Newsletter: Mary Jones – Analogic Corporation [maryajones@ieee.org](mailto:maryajones@ieee.org)  
Publicity: Vacant

### Members at Large:

Dan Weidman - MIT Lincoln Laboratory [danweidman@ieee.org](mailto:danweidman@ieee.org)  
Gene Bridgers - Results MA [gbridgers@resultsma.com](mailto:gbridgers@resultsma.com)  
Giora Kuller - Retired [g.k.kuller@ieee.org](mailto:g.k.kuller@ieee.org)

## Chapter Seeks Volunteers

The IEEE mission is Advancing Technology of Humanity.

The IEEE Reliability Society mission is Promoting recognition of the reliability profession, developing, and disseminating reliability best practices, and being a resource for collaboration among reliability professions.



As a volunteer organization, our success is directly related to having people like you involved in the planning and execution of our meetings and communication processes.

Please consider joining us.

Email us or attend one of our Advisory Committee meetings to see how the team works together. Your contributions may be as much or as little as you would like. We have a good team of volunteers that help us keep things going, so if you would like to join us, there is ample opportunity to choose how you would like to contribute.

You may find URL links to all the meetings on <https://events.vtools.ieee.org>, - search for region 1, section Boston, CH01021. For updates on upcoming events see the IEEE Spectrum or contact Mike Bannan [michael.bannan@ieee.org](mailto:michael.bannan@ieee.org) to be added to our notification list.

## **Consider Reliability Society Membership**

Society Membership includes:

- Society Newsletter (electronic),
- IEEE Transactions on Reliability (online),
- IEEE Reliability Society Conference Digital Library (online), and
- IEEE Reliability Society Resource Center (online).

Readers can contact chapter newsletter editor Mary Jones ([maryajones@ieee.org](mailto:maryajones@ieee.org)) with any comments, suggestions or if interested in contributing to our next issue.

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