



**CROSSROADS OF AMERICA
CHAPTER**

Chapter Meeting

6:00 PM, Tuesday March 12, 2019 www.incose-coa.org

Program:

Set-Based Design for Early System Design Tradespace Exploration

System analysts perform Tradespace Exploration (TSE) in early system design to identify affordable system concepts that have the potential to meet stakeholder requirements. For complex systems, TSE is challenging due to uncertainties about the future mission(s), environments, threats, technologies, and requirements. Typically, systems analysts have identified and evaluated “promising” point designs that they believe span the system concept and design space or have used optimization techniques to identify the Pareto frontier. Selecting the “best” point design has led to cost growth, schedule slips, and sometimes program cancelation as the uncertainties are resolved. We consider an alternative, called Set-Based Design, which seeks to identify the most promising sets to continue into design and eliminates sets as information becomes available to reduce the uncertainties. This presentation uses Probability Management© with an integrated trade-off analytics framework with Model-Based Engineering to explore 100,000 potential system design concepts and architectures in near real-time. We demonstrate TSE with SBD with an Army Unmanned Aerial Vehicle case study to identify design sets, assess design feasibility, evaluate concepts (value and cost), and assess requirements by displaying sets with common design choices. TSE will SBD can inform future systems requirements and help systems decision makers select the most promising sets for development.

Speaker: Gregory S. Parnell, University of Arkansas



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Meeting Location / Host Site (see included directions and map to host site and parking)

Beckman-Coulter, Inc.
5350 Lakeview Pkwy S Dr
Indianapolis, IN 46268

Satellite Site

No satellite site this month

Remote Access: If you cannot attend at the host location, join us remotely:

Web access: <https://incose.pgimeet.com/GlobalmeetTwo> (join as a GUEST)

Audio: (719) 457-1414

Guest Passcode: 514-684-9877

Meeting RSVP

To assure we have a (complementary) meal and seat reserved for you, please email your plan to attend to Chris Hoffman at diesel_chris@me.com. You do not need to be an INCOSE member to attend!

ALL are asked to complete this survey to help inform our future Technical Programs:

<https://www.surveymonkey.com/r/C9NJ2DN>

Event Schedule

6:00 – 6:10	Arrival, Security Check In
6:10 – 6:30	Light Meal, Informal Networking
6:30 – 7:00	Business Meeting
7:00 – 8:00	Program
8:00 PM	Adjourn

Business Meeting:

- Call to Order
- Approve/update minutes from previous Chapter meeting. (Attached)
- Announcements
- Treasurer's Report
- Old Business
- New Business



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Speaker Biographical Sketch:



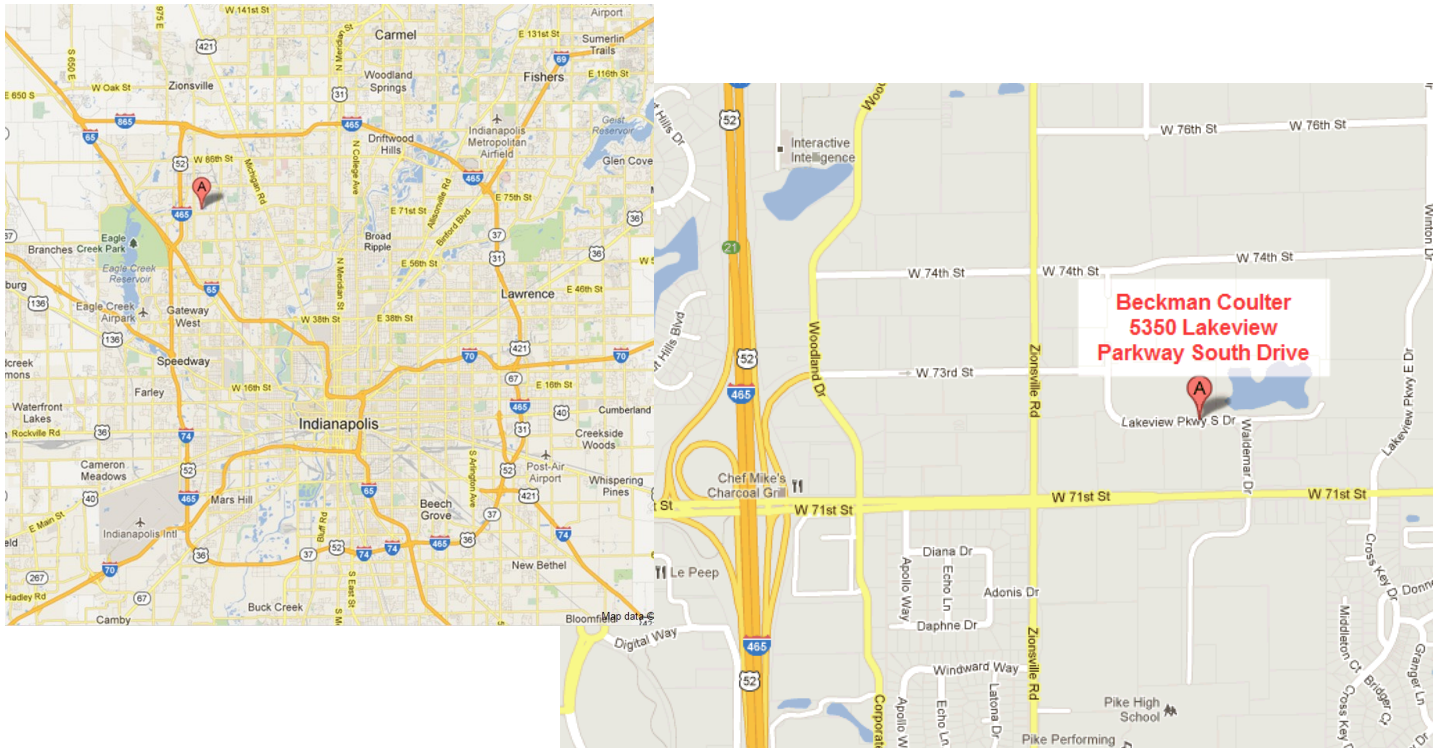
Dr. Gregory S. Parnell is a Research Professor, Department of Industrial Engineering, University of Arkansas and is Director of the M.S. in Operations Management and the M.S. in Engineering Management programs. His research focuses on decision and risk analysis. He is editor of *Trade-off Analytics: Creating and Exploring the System Tradespace* (2017), lead editor of *Decision Making for Systems Engineering and Management*, (2nd Ed, 2011), and lead author of the *Handbook of Decision Analysis* (2013). He is a fellow of the International Committee for Systems Engineering, the Institute for Operations Research/Management Science, and the Military Operations Research Society. He previously taught at West Point, the U.S. Air Force Academy, the Virginia Commonwealth University, and the Air Force Institute of Technology. He is also a Senior Principal Analyst and Board member of Innovative Decisions Inc. He has a Ph.D. from Stanford University and is a retired Air Force Colonel with systems acquisition and systems analysis experience.



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Directions to Host Meeting Site: (Indianapolis)

Beckman Coulter, Inc., 5350 Lakeview Parkway South Drive, Indianapolis: This is within Park 100 just east of I-465 and 71st Street on the far northwest side of Indianapolis:



CROSSROADS OF AMERICA – INCOSE – CHAPTER MEETING MINUTES

Date: February 12, 2019
Site host: Roche Diagnostics
Food host: Roche Diagnostics

Participants:

Speakers

Bill	Schindel
Bob	Kenley
Mike	Celentano
Bill	Bihlman
Ibukun	Phillips

Attendees *26 – onsite and remote*

Bart	Addis
Shashank	Alai
Bill	Bihlman
Mike	Celentano
Paul	DeMond
Mat	French
Bob	Gerard
Chris	Hoffman
Bob	Kenley
Everett	Lewis
Govind	Malleichervu
Richard	Martin
Ibukun	Phillips
Andy	Pickard
Shefali	Rana
Fred	Rastede
Ali	Raz
Bill	Schindel
John	Spivy
Robert	Stevens
Dan	Surber
Ajay	Thukral
Vijay	Thukral
Ram	Velamakanni
Clay	Watkins
Scott	Weigand

Summary:

1. Next chapter meeting is 6-8 PM Tuesday, 12 March 2019 at Beckman-Coulter, Inc.: located at 5350 Lakeview Pkwy S Dr, Indianapolis, IN 46268. The meeting site host is Clay Watkins, food sponsored by Cummins Inc., preceded by the Board of Directors meeting from 5-6 PM.

Notes:

1. Meeting started at 6:30 PM, preceded by meal and social networking at 6 PM.
2. Minutes from previous Chapter meeting
 - a. No chapter meeting in January 2019.
3. Announcements
 - a. We thank Roche Diagnostics, Mike Celentano, for hosting the meeting and sponsoring the food.
4. Treasurer's Report
 - a. Current chapter balance in the bank: \$33,641.55
 - b. Committed expenses: \$4,029.55 (waiting on checks to clear)
 - c. Effective COA balance: \$29,612
5. Old Business
 - a. None
6. New Business
 - a. The board shared a request to propose ways to spend our budget to further the mission and vision of INCOSE. Several ideas were discussed, with the ending comment that any proposal needs a chapter representative (sponsor) to promote the idea and 'follow the money' into the community.
 - b. Some of the groups mentioned were: FIRST robotics, Vex robotics, local/state governmental programs, V4i, workforce development, Purdue's Tech High Schools (Broad Ripple), Indiana Manufacturing Association, Pharma, and medical clinics in struggling areas.
7. Next meeting is March 12, 2019. Location is Beckman-Coulter, Inc.
8. End of chapter meeting: 6:55 pm
9. Technical program: Bill Schindel, Bob Kenley, Mike Celentano, and Bill Bihlman: Review of IW2019, and Ibukun Phillips, A SSM-TRIZ Methodology for Business Problem Structuring.
 - a. Poster is available on our Chapter website
10. Meeting adjourned

****Action Items:**

11. None

References:

12. None