

# Introduction to Pattern-Based Systems Engineering (PBSE): Leveraging MBSE Techniques

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**Abstract.** This workshop is a practitioner's introduction to Pattern-Based Systems Engineering (PBSE), including a specific system domain illustration suitable for educational use. INCOSE thought leaders have discussed the need to address 10:1 more complex systems with 10:1 reduction in effort, using people from a 10:1 larger community than the "systems expert" group INCOSE currently reaches. Through the PBSE Project, the project team proposes to enable INCOSE membership, and the larger systems community beyond INCOSE, to achieve such order-of-magnitude improvements. PBSE leverages the power of Model-Based Systems Engineering (MBSE) to rapidly deliver benefits to a larger community. Projects using PBSE get a "learning curve jumpstart" from an existing Pattern, gaining the advantages of its content, and improve that pattern with what they learn, for future users. The major aspects of PBSE have been defined and practiced some years across a number of enterprises and domains, but with limited INCOSE community awareness. A related tutorial was recently provided at the INCOSE 2012 Great Lakes Regional Conference, and well-attended.

## Biography

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Bill Schindel is president of ICTT System Sciences ([www.icctt.com](http://www.icctt.com)), a systems engineering company. His 40-year engineering career began in mil/aero systems with IBM Federal Systems, Owego, NY, included service as a faculty member of Rose-Hulman Institute of Technology, and founding of three commercial systems-based enterprises. He has led and consulted on improvement of engineering processes within automotive, medical/health care, manufacturing, telecommunications, aerospace, and consumer products businesses. Schindel earned the BS and MS in Mathematics, and serves as a Trustee of Rose-Hulman Institute of Technology. At the 2005 INCOSE International Symposium, he was recognized as the author of the outstanding paper on Modeling and Tools, and currently co-leads a research project on the science of Systems of Innovation within the INCOSE System Science Working Group. Bill is an INCOSE CSEP, and president of the Crossroads of America INCOSE chapter.

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Troy Peterson is a Senior Associate at Booz Allen Hamilton with over 19 years' experience in systems development and management. He has led several distributed teams in delivery of large-scale complex systems and has instituted numerous organizational processes to improve efficiency and effectiveness. His consulting experience spans academic, commercial and government sectors across all development lifecycle phases. Troy leads Booz Allen's support to the U.S. Army TARDEC and the firm's engineering support across the TACOM LCMC. Prior to Booz Allen Troy worked at Ford Motor Company and Peterson & Associates, Inc., which he founded and operated in support to academic research labs and small engineering firms. Troy completed advanced graduate studies at Massachusetts Institute of Technology in System Design and Management, obtained a MS in Business and Technology Management from Rensselaer Polytechnic Institute and holds a BS in Mechanical Engineering from Michigan State University. He is Michigan State University's Mechanical Engineering Department Advisory Board Secretary and is the INCOSE Michigan Chapter Past President. Troy is an INCOSE Certified Systems Engineering Professional, PMI Project Management Professional, and ASQ Certified Six Sigma Black Belt.