NAFEMS UK Regional Conference 2018 - Abstract Submission

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Name	Mr. Stephen Boot
Job Title	Technical Consultant
Company	Siemens PLM
Department	Pre-sales
Please identify the event for which your submitting?	NAFEMS UK Conference 2018
Will you be the presenting author?	Yes
Presentation Title	Enabling non-expert users (designers and analysts) across the enterprise to discover better designs, faster by automating design exploration
Relevant Themes / Keywords	Design, Space, Exploration, Simulation, data, process, management, SDPM, traceability

Abstract (plain text)	Enabling non-expert users (designers and analysts) across the enterprise to discover better designs, faster by automating design exploration Design Space Exploration tools are becoming increasingly essential in modern product development processes - to automatically explore the design space and quickly identify innovative solutions that meet desired goals, such as reducing product cost and / or mass while improving performance across one or more disciplines/departments. Simulation data and process management (SDPM) systems are –being used to provide complete traceability from product performance requirements to simulation results and reports, to provide a collaborative environment for designers and analysts across the enterprise, to manage and automate simulation tasks and processes etc. This paper focuses on how an SDPM system, enables non-expert users (designers and analysts) across the enterprise to discover better designs, faster by automating design exploration using design space exploration tools. Following steps explain how this approach works: ¬ Expert users create design space exploration templates to capture digital product development workflows using the design and analysis tools of choice. These templates are saved, reviewed and released in the SDPM system. ¬ Information about the design space exploration template – description, studies set-up, input files and parameters (inputs, outputs, constraints and variables) etc. are available in the SDPM system. Users can choose a desired design space exploration template based on information available in the SDPM system without having to launch the design space exploration tool. ¬ Non-expert users (designers and analysts) can search in the SDPM system, find the desired design space exploration template and initiate a new design exploration by choosing the desired study, and adjust inputs (geometry, models, initial results etc.) from the SDPM system. ¬ The SPDM system automates execution of the design space exploration analysis tools on local or remote machines. During the run, the currently explored design space results are available to review. A notification can be sent to the user when the process is complete. ¬ Non-expert users can review results directly in the SDPM system to gain greater insight and understanding of the key characteristics that influence performance. Following are the benefits of this approach: ¬ Knowledge capture of product validation workflows to reuse across the enterprise ¬ Ability to hide workflow details and keep them confidential from the users ¬ Non-expert users discover better designs, faster through design space exploration ¬ Non-expert users can leverage high performance computing to reduce validation time ¬ Non-expert users can gain greater insight and understanding about design performance ¬ Complete traceability from requirements, to designs, to design space exploration templates and simulation results
Please enter any additional comments or messages here	Co authored with Narendra Kondragunta and Ian Hogg

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