

Practical Tools for Computer Aided Innovation

Dr. Andreas Vlahinos

Advanced Engineering Solutions

www.aes.nu

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Abstract:

No amount of automation can compensate for a poor conceptual design. This presentation will demonstrate a practical set of computer aided tools that assist engineers in increasing their innovation skills. The following demonstration and examples will be presented:

- A demonstration using **topology optimization** to maximize the stiffness of a structure by distributing a given amount of material in a design domain subject to load and support conditions.
- A demonstration using **mechanism synthesis** tools to generate in seconds several concept mechanisms that follow a given path and the supports remain within a given domain.
- A description of available computer aided **TRIZ** tools will be presented. These tools quickly generate a high number of potential conceptual designs and eliminate technological barriers and engineering contradictions.
- A description of available computer aided rational **materials selection** tools will be presented. These tools quickly search and browse materials data and use quantitative positioning methods to aid critical materials selection and substitution decisions.