

## **HPC CAE SIMULATION FOR SURF BUMS**

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### **KEYWORDS**

HPC, surfing, workflows, automation, CAE, CAD, optimization, mesh morphing

### **ABSTRACT**

Of all the stereotypes surrounding surfing, nothing pervades society like the image of a “surf bum.” You know him, the blonde haired character on T.V. whose sole job it is to be unmotivated and worthless. Yet even as we mercilessly degrade people with a skill set that takes years of hard work and there’s something universally appealing about the surf bum.

These bums may not be successful in conventional terms, but surf bums have a lot more going for them than the average layman. They’re motivated in a quest of passion. So, next time you find yourself scooting out of the water in order to get your engineering drawings in on time, think about what it would be like to live the alternative: to consciously bum it up. To laugh in the face of financial instability and to avoid work at all costs. These guys need CAE on HPC in order to maintain their lifestyle because a) they can’t afford their own computers, b) they are too busy shredding to creating complex workflows and workloads and c) many don’t have advanced physics degrees.

We show how automating open source and commercial codes were used to enable someone that shapes surf boards with no CAD or CAE background to create a better surfing experience. By utilizing an automated workflow that interfaces with a CAD tool, mesh morpher, CFD code, and a post processor, the user can, through a Microsoft Excel based interface drive the entire process. With robust connectivity

and a stable CFD mesh and solution setup reliable drag and vorticity results can be communicated back to the user.

In order to enable this seamless connectivity a process integration and design optimization tool with a fully open API was used. Optimus, by Noesis Solutions, was the selected tool. The Python API inside of Optimus allowed for linking of Excel to the workflow. The easy-to-use graphical interface and debugging tools enabled development of the workflow.

This presentation will show both the process to enable the study and the results of the optimization. It is sure to be interesting and engaging topic on the best surfing beaches in the world.