

## ENHANCEMENTS AND APPLICATIONS OF THE GRAFT TOOL

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The Grafting Algorithm was originally developed to enhance the capabilities of sweeping.<sup>[1]</sup> Using the Graft Tool, objects that have imprints or protrusions on the linking surfaces of a swept volume can easily be meshed. This meshing process includes three steps: 1- Mesh the trunk volume, 2- Graft the branch volume onto the trunk volume, 3- Sweep the branch volume. Since its original introduction, effort has been made to increase the capabilities and robustness of the grafting algorithm. This effort is primarily directed at improving these areas of the graft tool: grafting onto unstructured surfaces, grafting onto the boundary of a surface, and grafting multiple volumes onto one surface. Presented here is the improved grafting algorithm and recent applications where it has aided in the meshing process.

### References:

[1] Jankovich, S. R.; Benzley, S. E.; Shepherd, J. F.; and Mitchell, S. A.; "The Graft Tool: An All-Hexahedral Transition Algorithm For Creating a Multi-Directional Swept Volume Mesh," *Proceedings, 8<sup>th</sup> International Meshing Roundtable, Sandia National Laboratories*, 99, pp. 387-392, October 1999.