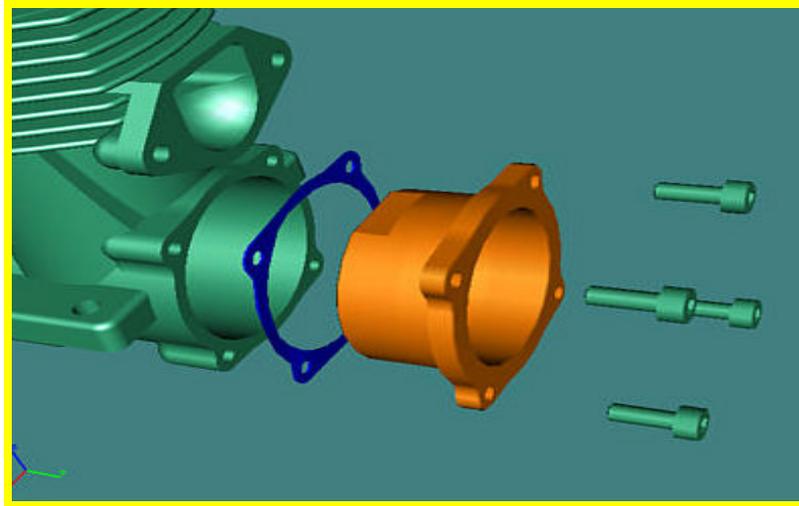


# Development of Integrated Design/ Manufacturing Fabrication Simulation Capability



## Objective

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This effort will develop in-house manufacturing simulation knowledge and capability to model fabrication sequences for structural design models. It is further intended that the simulation tool provide a cost efficient way of optimizing the fabrication sequence and provide the capability of producing actual fabrication floor orders.

## Why Needed

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The integrated design/manufacturing 3D model simulation system will greatly enhance the present fabrication process, by providing the Center with a simulation tool that will aid both design and manufacturing engineers in greatly reducing fabrication time and cost. Using this system, design engineers will be able to send their structural models directly to the shop floor, where simulations of various machining processes and fabrication scenarios can be easily conducted and analyzed. The end result will be an optimal fabrication sequence, which is cost effective, uses minimum manpower, and produces the highest structural quality. The simulations will then be developed into electronic, interactive shop floor work instructions. The end result will be a state-of-the-art design for producibility process. High technology fabrication simulation tools are being used throughout industry to optimize the design-for-producability process. The proposed simulation tool will provide design and manufacturing with the capability of evaluating a design based on how difficult it is to fabricate. This tool will allow manufacturing engineers to take a design Computer Aided Design (CAD) model and quickly develop simulations of how the fabrication process will occur. The simulations will readily show any potential fabrication problems with the proposed design and can be used to optimize the fabrication process. The feedback can be sent directly back to design, providing crucial information on how best to modify the design in order to decrease manufacturing time and lower cost. In short, this tool will provide the Center with a cost efficient way of cutting down on both design and manufacturing time. Producability studies, which presently consume enormous manpower and take weeks, can be conducted in a matter of days using the proposed fabrication simulation system. As the Center moves forward with its Advanced Engineering initiative, a simulation tool of this type will be absolutely necessary to design and manufacture aerospace components.

## Point of Contact

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## Sponsor

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Center Director's Discretionary Fund (CDDF)