

Advanced Simulation using Nastran

NX5 / NX6

**A Project Oriented Learning Manual for People
Who Design Stuff**

By

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**DESIGN
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Dedication

We dedicate this work to product designers everywhere, who continuously ask themselves, “How can this be better?” The value of what you do and the creativity that it requires is incalculable.

We also dedicate this work to all others who make the world a better place to live and thrive.

Who Are Design Visionaries?

We are. . .

Design Visionaries

design (de·sign) to plan and make something in a skillful or artistic way

visionaries (vi·sion·ar·ies) characterized by unusually acute foresight and imagination

Not just our name, but who we are.

Design Visionaries offers a unique blend of engineering-related products and engineering know-how. We are fortunate to have extremely talented, highly qualified, creative, professionals available to supply an extraordinary array of design and engineering services. Our knowledge and experience span a large range of engineering disciplines and industries. Our services and products include private and public custom training, training manuals, Product Lifecycle Management, VAR software sales, product design, industrial design, industrial, legal and product animation, forensic engineering; analysis, and project management.

DV was founded in 1993 by our current president, Stephen Samuel. Stephen has trained thousands of engineers in Unigraphics, written self-paced courses in UG Advanced Modeling and Best Practices, and performed design work for numerous Fortune 500 companies.

Stephen Samuel, Founder and President of Design Visionaries, has over 25 years' experience in developing and using high-end CAD tools and mentoring users. During a ten-year career at Pratt & Whitney Aircraft, he was responsible for implementing advanced CAD/CAM technology in a design/manufacturing environment. He has trained thousands of engineers in Unigraphics, written self-paced courses in UG Advanced Modeling and Best Practices, and performed design work for numerous Fortune 500 companies. Stephen is the author of distinctive publications on UGNX CAD, Teamcenter Engineering/PLM, and now this proud publication.

Previous Publications

What readers have to say about our previous books:

Bryan McDonald, Product Design Manager at Apple Computers

“Bottom line: this is an excellent book. If anyone wants to learn how to use Unigraphics quickly, efficiently and practically, this is the way to do it.”

Fred Dyen, Director of St. Louis University’s Aviation Maintenance Institute (AMI)

“Practical Unigraphics NX2 Modeling for Engineers was extremely effective and much better than [other] textbooks. I would highly recommend this book to other professors and students alike.”

Dr. Pat Spicer, Professor at Western Illinois University

“The UG NX2 textbook is well organized. Its tutorial style of learning is easy for students to utilize. The practice exercises are essential. From my experience in teaching students to use UG software, I have found that this is the best textbook currently on the market for teaching UG NX2.”

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Preface

Writing this short manual has been a true joy. It's an honor and a pleasure to work with you – folks all over the globe that are trying to bring something new to us all. In this book, we will work on some very simple components and assemblies to learn all the skills needed to conduct different types of finite element analyses. This manual can be used as your continual cheat sheet for NX5 Advanced Simulation / Nastran software.

In addition, this manual is a work in progress. Please feel free to mark it up and give us feedback.

Additional remarks:

Nothing will ever fully replace “Build ‘em and bust ‘em”, the act of building a full sized prototype and subjecting it to a battery of tests, to truly find out how a mechanical component or assembly will perform. However, “Build ‘em and bust ‘em” can be incredibly expensive. Now, finite element analysis tools are readily available and actually run on hardware that can be purchased for a couple of thousand dollars. It's time for we, the people who design stuff on a daily basis, to be empowered. The old adage, “When in doubt make it stout,” has increasingly less validity. Perhaps we can now consider “When in doubt FEM it out”.

Steve Samuel

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