Exploring Autodesk Navisworks 2021

(8th Edition)

CADCIM Technologies

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ISBN 978-1-64057-105-1

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DEDICATION

To teachers, who make it possible to disseminate knowledge
to enlighten the young and curious minds
of our future generations

To students, who are dedicated to learning new technologies
and making the world a better place to live in

SPECIAL RECOGNITION

A special thanks to Mr. Denis Cadu and the ADN team of Autodesk Inc.
for their valuable support and professional guidance to
procure the software for writing this textbook

THANKS

To employees of CADCIM Technologies and
Tickoo Institute of Emerging Technologies (TIET)
for their valuable help

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Conversion Table-Metric/English			
	Units	**Multiply By (Factor)**	**To Obtain**
Length	Inch	2.54	Centimeter
	Centimeter	0.393	Inch
	Feet	0.301	Meter
	Meter	3.281	Feet
	Kilometer	0.54	Nautical Mile
	Nautical Mile	1.852	Kilometer
	Feet	0.000304	Kilometer
Weight and Mass	Ounce	28.35	Gram
	Gram	0.0353	Ounce
	Pound	0.453	Kilogram
	Kilogram	2.205	Pounds
	Metric Ton	1.102	Ton
Liquid Measures	Fluid Ounce	0.0296	Liter
	Gallon	3.785	Liter
	Liter	0.264	Gallon
Thrust / Pressure	Pounds Force	4.448	Newton
	Newton	0.225	Pound
	Pound per square inch (psi)	6.895	Kilo Pascal
Temperature	Kelvin	1	Degree Celsius-273.15
	Degree Celsius	1.8	Degree Fahrenheit +32

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Preface

Autodesk Navisworks 2021

Autodesk Navisworks 2021, developed by Autodesk Inc., is a powerful software used for reviewing integrated models and data. It has various tools that help in combining 3D models, navigating around them, reviewing them, creating 5D simulation, creating quantity takeoff, and rendering. This enables the users to harness the power of BIM with Autodesk Navisworks for their specific use. Autodesk Navisworks is an effective tool for architects, civil engineers, and construction professionals.

Autodesk Navisworks has interoperability with major design softwares such as Autodesk Revit Architecture / Structure / MEP, AutoCAD, AutoCAD Plant 3D, Autodesk Inventor, Microsoft Project, and Autodesk 3ds Max.

Exploring Autodesk Navisworks 2021 is a comprehensive textbook that has been written to cater to the needs of the students and professionals. The chapters in this textbook are structured in a pedagogical sequence, which makes the learning process very simple and effective for both the novice as well as the advanced users of Autodesk Navisworks. In this textbook, the author emphasizes on creating 4D simulation, performing clash detection, performing quantity takeoff, rendering, creating animation, and reviewing models through tutorials and exercises. In addition, the chapters have been punctuated with tips and notes, wherever necessary, to make the concepts clear, thereby enabling you to create your own innovative projects.

The highlight of this textbook is that each concept introduced in it is explained with the help of suitable examples to facilitate better understanding. The simple and lucid language used in this textbook makes it a ready reference for both the beginners and the intermediate users. In addition, the case study added at the end would immensely help readers as it gives insights into a real world BIM project.

- **Tutorial Approach**
  The author has adopted the tutorial point-of-view and learn-by-doing approach throughout the textbook. This approach guides the users through various processes involved in creating and analyzing spatial data. At the end of each chapter, tutorials are provided to practice the concepts learned in the chapter.

- **Real-World Projects as Tutorials**
  The author has used about 17 real-world Navisworks projects as tutorials in this book. This will enable the readers to relate the tutorials to the real-world projects in the industry. In addition, there are about 9 exercises based on the real-world projects.

- **Case Studies**
  The author has used about 2 projects from BIM Engineers as case studies. This will enable the readers to relate the case studies to the real-world projects in the industry.

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- **Tips and Notes**
  The additional information related to topics is provided to the users in the form of tips and notes.

- **Learning Objectives**
  The first page of every chapter summarizes the topics that are covered in that chapter.

- **Self-Evaluation Test, Review Questions, and Exercises**
  Every chapter ends with Self-Evaluation Test so that the users can assess their knowledge of the chapter. The answers to Self-Evaluation Test are given at the end of the chapter. Also, the Review Questions and Exercises are given at the end of the chapters and they can be used by instructors as test questions and exercises.

- **Heavily Illustrated Text**
  The text in this book is heavily illustrated with screen capture images.

Symbols Used in the Textbook



Note

The author has provided additional information related to various topics in the form of notes.



Tip

The author has provided a lot of information to the users about the topic being discussed in the form of tips.

Unit System Followed in the Textbook

In this book, the Metric system has been used as the default unit system. In addition, the Imperial conversions of Metric units are also mentioned in parenthesis wherever required.

Formatting Conventions Used in the Textbook

Please refer to the following list for the formatting conventions used in this textbook.

• Names of tools, buttons, options, browser, palette, panels, and tabs are written in boldface.	Example: The **Walk** tool, the **Enable Scripts** button, the **Project** panel, the **Home** tab, and so on.
• Names of dialog boxes, drop-downs, drop-down lists, list boxes, areas, edit boxes, check boxes, and radio buttons are written in boldface.	Example: The **File Options** dialog box, the **Alignment** drop-down list, the **Position** edit box of the **Edit Viewpoint - Current View** dialog box, and so on.
• Values entered in edit boxes are written in boldface.	Example: Enter **Buildings** in the **Name** edit box.

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Naming Conventions Used in the Textbook

Tool

If you click on an item in a panel of the ribbon and a command is invoked to create/edit an object or perform some action, then that item is termed as tool. For example: **Select** tool and **Zoom** tool.

Button

The item in a dialog box that has a 3d shape like a button is termed as Button. For example, **OK** button, **Cancel** button, **Apply** button, and so on.

Drop-down

A drop-down is the one in which a set of common tools are grouped together. You can identify a drop-down with a down arrow on it. These drop-downs are given a name based on the tools grouped in them. For example, **Select All** drop-down, **Windows** drop-down, and so on, refer to Figures 1 and 2.

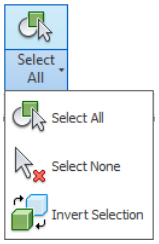


Figure 1 *The* ***Select All*** *drop-down*

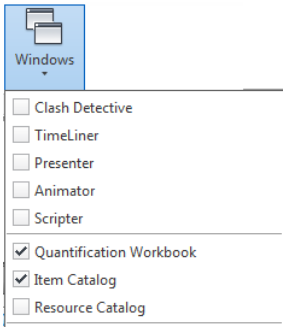
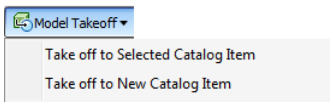


Figure 2 *The* ***Windows*** *drop-down*

Drop-down List

A drop-down list is the one in which a set of options are grouped together. You can set the parameters using these options. You can identify a drop-down list with a down arrow on it. For example, **Model Takeoff** drop-down list, **Linear Units** drop-down list, and so on, refer to Figure 3.



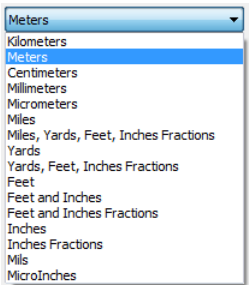


Figure 3 *The* ***Model Takeoff*** *and* ***Linear Units*** *drop-down lists*

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Options

Options are the items that are available in shortcut menus, dialog boxes, drop-down lists, and so on. For example, choose the **Test Action** option from the shortcut menu displayed on right-clicking in the drawing area.

Free Companion Website

It has been our constant endeavor to provide you the best textbooks and services at affordable price. In this endeavor, we have come out with a Free Companion website that will facilitate the process of teaching and learning of Autodesk Navisworks 2021. If you purchase this textbook, you will get access to the files on the Companion website.

The resources available for the faculty and students in this website are as follows:

Faculty Resources

- **Technical Support**
  You can get online technical support by contacting ***techsupport@cadcim.com***.

- **Instructor Guide**
  Solutions to all review questions and exercises in the textbook are provided in the instructor guide to help the faculty members test the skills of the students.

- **Part Files**
  The Navisworks files used in illustrations, and tutorials, and exercises are available for free download.

Student Resources

- **Technical Support**
  You can get online technical support by contacting ***techsupport@cadcim.com***.

- **Part Files**
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