

# Interactive 3D Multimedia Content

Wojciech Cellary • Krzysztof Walczak  
Editors

# Interactive 3D Multimedia Content

Models for Creation, Management,  
Search and Presentation

 Springer

*Editors*

Wojciech Cellary  
Department of Information Technology  
Poznań University of Economics  
Poznań, Poland

Krzysztof Walczak  
Department of Information Technology  
Poznań University of Economics  
Poznań, Poland

ISBN 978-1-4471-2496-2

e-ISBN 978-1-4471-2497-9

DOI 10.1007/978-1-4471-2497-9

Springer London Dordrecht Heidelberg New York

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

Library of Congress Control Number: 2011946277

© Springer-Verlag London Limited 2012

Apart from any fair dealing for the purposes of research or private study, or criticism or review, as permitted under the Copyright, Designs and Patents Act 1988, this publication may only be reproduced, stored or transmitted, in any form or by any means, with the prior permission in writing of the publishers, or in the case of reprographic reproduction in accordance with the terms of licenses issued by the Copyright Licensing Agency. Enquiries concerning reproduction outside those terms should be sent to the publishers.

The use of registered names, trademarks, etc., in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant laws and regulations and therefore free for general use.

The publisher makes no representation, express or implied, with regard to the accuracy of the information contained in this book and cannot accept any legal responsibility or liability for any errors or omissions that may be made.

Printed on acid-free paper

Springer is part of Springer Science+Business Media ([www.springer.com](http://www.springer.com))

# Contents

<b>1</b>	<b>Introduction . . . . .</b>	<b>1</b>
	Wojciech Cellary and Krzysztof Walczak	
<b>2</b>	<b>Interactive 3D Content Standards . . . . .</b>	<b>13</b>
	Wojciech Cellary and Krzysztof Walczak	
<b>3</b>	<b>Issues in Creation, Management, Search and Presentation of Interactive 3D Content . . . . .</b>	<b>37</b>
	Wojciech Cellary and Krzysztof Walczak	
<b>4</b>	<b>Dynamic Database Modeling of 3D Multimedia Content . . . . .</b>	<b>55</b>
	Krzysztof Walczak	
<b>5</b>	<b>Building Configurable 3D Web Applications with Flex-VR . . . . .</b>	<b>103</b>
	Krzysztof Walczak	
<b>6</b>	<b>Modeling Interactive Augmented Reality Environments . . . . .</b>	<b>137</b>
	Rafał Wojciechowski	
<b>7</b>	<b>Secure User-Contributed 3D Virtual Environments . . . . .</b>	<b>171</b>
	Adam Wójtowicz	
<b>8</b>	<b>Describing Interactivity of 3D Content . . . . .</b>	<b>195</b>
	Jacek Chmielewski	
<b>9</b>	<b>Searching Content Related by Semantics, Space and Time . . . . .</b>	<b>223</b>
	Mirosław Stawniak	
<b>10</b>	<b>Interactive 3D Visualization of Search Results . . . . .</b>	<b>253</b>
	Wojciech Wiza	
	<b>Index . . . . .</b>	<b>293</b>