Expanded article
Software development is about understanding and satisfying our customers. That means much is at stake. In addition to credibility fallout with customers, requirements problems can generate expensive downstream changes (estimates range from 28% to 42.5% of your overall project costs). In other words, requirements are a worthy topic to address.

Translating customer requests into software requires exploration, learning, and discovery. As such, this Reference Point focuses primarily on requirements exploration and modeling. Requirements exploration involves eliciting, acquiring, prioritizing, negotiating, validating, and verifying requirements. Requirements modeling involves representing requirements using a variety of visual or text (or both) techniques, analyzing those models, and specifying requirements in detail.

In practice, requirements exploration and modeling work in tandem. Together, they involve the process of learning what to build – often the most elusive part of software development. Here you'll find my top recommendations for books, journals, and online resources on the subject.

Requirements Essentials: Getting a Grip
Here are what I consider to be the top three books on requirements as a whole.

Requirements Engineering: A Good Practice Guide, Ian Sommerville and Pete Sawyer
A quick and easy-to-read reference to all the essentials of requirements engineering. It presents guidelines for the requirements engineering practitioner.
www.stickyminds.com/sitewide.asp?ObjectId=233&ObjectType=BOOK&Function=edetail

Software Requirements, 2nd Edition Karl E. Wiegers
Wiegers provides thorough, concise, and direct coverage of requirements modeling and management topics.

Customer-Centered Products: Creating Successful Products Through Smart Requirements Management, Ivy Hooks and Kristen A. Farry
Aimed at business and IT managers, this book explains why and how to get things right the first time.

**Requirements Modeling and Exploration in General**

**Resources Online**

**Requirements Engineering Online Mailing List**
Requirements engineering researchers and practitioners exchange ideas, asks and answer questions, and share references.

[www.staff.it.uts.edu.au/~didar/RE-online.html](http://www.staff.it.uts.edu.au/~didar/RE-online.html)

**Requirements Quartely**
This publication is provided by the Requirements Engineering Specialist Group of the British Computer Society. The online journal has a nice mix of experience-based articles along with ongoing research topics.

[www.resg.org.uk](http://www.resg.org.uk) (click on "RQ")

**The StickyMinds.com Requirements Zone**
This selection of all the requirements content on the StickyMinds site contains many useful articles on requirements modeling and management.

[www.stickyminds.com](http://www.stickyminds.com) (click on "Requirements")

**Software-Engineer.Org**
This site includes access to software requirements engineering articles and links. Just select "Articles" from the navigation bar, then "Software Requirements Analysis" from the list of topics.

[www.software-engineer.org/](http://www.software-engineer.org/)

**Karl Wiegers’ Web Site**
Software requirements expert Karl Wiegers’ site has numerous articles on quality requirements practices as well as requirements templates.

[www.processimpact.com/pubs.shtml#requirements](http://www.processimpact.com/pubs.shtml#requirements)

**Ivy Hook’s Web Site**
Ivy Hooks, a requirements expert with extensive experience in human and mission critical software for NASA and the U.S. Department of Defense provides numerous articles and presentations about the importance of quality requirements.

[http://complianceautomation.com/](http://complianceautomation.com/) (go to: Resources, then Papers)

**Online Newsletter The Rational Edge**
Rational Software’s online monthly newsletter provides high quality articles on software development including requirements modeling and management.

[www.therationaledge.com/](http://www.therationaledge.com/)

**Online Newsletter from Telelogic**
Telelogic’s monthly Newsbyte includes articles on both requirement modeling and management.

[www.telelogic.com/newsbyte/](http://www.telelogic.com/newsbyte/)

**The Requirements Management Place**
Al Davis’ site includes his own requirements articles and a large requirements bibliography.

[www.rmplace.org](http://www.rmplace.org)

**The PSARE Site**
A site supporting Hatley, Hruschka, and Pirbhai’s book on system architecture and requirements
engineering, geared primarily to modeling real-time systems.  
www.psare.com/

IEEE Task Force on Requirements Engineering  
The IEEE Task Force on Requirements Engineering has links to requirements resources and organization.  
www.shu.ac.uk/tfre/web.links.html

NASA’s Recommended Approach to Software Development  
The Software Engineering Lab (NASA) document includes two sections on requirements definition and analysis.  

The CeBase Site  
The Center for Empirically-Based Software Engineering (CeBASE) site, established to help our industry go from fad to glad by validating empirical techniques and models.  
www.cebase.org/

Barry Boehm’s WinWin Method  
Home of WinWin, Barry Boehm’s method for requirements negotiation  
http://sunset.usc.edu/research/WINWIN/

STQE Article on User Driven Design  
Don Gause and Brian Lawrence’s article in the inaugural issue of STQE tells you why and how to make users the focus of requirements.  
www.sticky minds.com/sitewide.asp?ObjectId=2659&ObjectType=ART&Function=edetail

Agile Requirements Modeling Essays  
Various essays on agile requirements modeling are posted by Scott Ambler as well as resource links to agile modeling articles online.  
www.agilemodeling.com/essays/agileRequirements.htm

The Business Rule Community  
Business rules are the heart of your functional requirements. The business rules community provides access to numerous articles on business rules and the Business Rules Journal.  
www.brcommunity.com

Requirements Bibliography  
A comprehensive (Over 1100 entries) bibliography of books and articles on the topic of requirements provided by requirements expert Al Davis.  
http://www.uccs.edu/~adavis/reqbib.htm

Resources In Print  
Exploring Requirements: Quality Before Design, Donald C. Gause and Gerald M. Weinberg  
The authors present a fun and straightforward look at the ambiguities of requirements and the human side of requirements elicitation. In so doing, they cut to the heart of what requirements elicitation is all about – discovery, exploration, negotiation, learning and conflict.  
www.sticky minds.com/books.asp?ObjectId=57&ObjectType=BOOK&Function=edetail

Mastering the Requirements Process, Suzanne Robertson and James Robertson  
The Robertsons combine process with modeling by explaining how to gather (or as they call it “trawl”) and verify requirements. The book includes a detailed explanation of their Volere
requirements specification template.
www.stickyminds.com/books.asp?Objectid=384&ObjectType=BOOK&Function=edetail

**Software Requirements: Styles and Techniques, Soren Lauesen**  
The author provides a survey of requirements techniques, including several approaches useful for customer and commercial off-the-shelf (COTS) software, good coverage of requirements quality and management, and requirements elicitation techniques.  

**Practical Software Requirements, Benjamin L. Kovitz**  
A unique requirements style guide that draws from Jackson's concept of a "problem frame" and focuses on using appropriate requirements models and solving the right problem.  
www.stickyminds.com/books.asp?ObjectId=341&ObjectType=BOOK&Function=edetail

**IEEE Software Magazine**  
This bimonthly journal blends theory into practice with frequent articles on or related to requirements. The journal includes a Requirements column edited by Suzanne Robertson.  
http://computer.org/software/index.shtml

**Problem Frames and Methods: Structuring and Analyzing Software Development Problems, Michael Jackson**  
A concise and intense treatment of requirements that focuses on understanding problems before solutions. Problem frames are patterns for managing separation of concerns, a key concept in requirements engineering.  

**Requirements Pattern: Succeeding in the Internet Economy, Patricia Ferdinandi**  
How to create complete and correct requirements based on the Zachman framework with an excellent set of questions to ask for each focus and perspective of requirements.  

**Managing Software Requirements: A Unified Approach, Dean Leffingwell and Don Widrig**  
ISBN 0201615932 Addison Wesley, 1999, $49.95, 528 pp  
Comprehensive coverage of requirements management and modeling emphasizing requirements processes advocated in the Unified Process.  
www.stickyminds.com/books.asp?ObjectId=454&ObjectType=BOOK&Function=edetail

**Requirements Engineering: Processes and Techniques, Ian Sommerville**  
ISBN 0471972088, John Wiley & Sons, 1998, $80.00, 282 pp  
An easy to read and concise textbook addressing the stages of requirements engineering along with an introduction to a variety of requirements modeling techniques.  

**Software Requirements Engineering, 2nd Edition Richard H. Thayer, Sidney Bailin, and M. Dorfman**  
ISBN 0818677384, IEEE Computer Society Press, 1997, $60.00, 600 pp
A collection of some of the best articles in requirement engineering.

Crosstalk
This monthly journal of defense software engineering often includes features on the topic of requirements.
www.stsc.hill.af.mil/

STQE, The Software Testing and Quality Engineering Magazine
This bimonthly publication often features topics on requirements exploration and management.
www.stqemagazine.com

Requirements Modeling and Exploration Techniques
Modeling with Use Cases and Scenarios
UseCases.Org
Alistair Cockburn’s site contains resources, information, and links on use cases.
www.usecases.org

Technical Papers by Ian F. Alexander
As the name suggests, this site contains Ian Alexander’s technical papers, many of which discuss use cases and scenarios.
http://easyweb.easynet.co.uk/~iany/consultancy/papers.htm

Writing Effective Use Cases, Alistair Cockburn
This is a well-written, practical guide for writing goal-oriented use cases that includes advice on how to scope use case along with useful style suggestions.
www.stickyminds.com/books.asp?ObjectId=426&ObjectType=BOOK&Function=edetail

Use Cases: Requirements in Context, Daryl Kulak and Eamonn Guiney
The authors’ readable and useful treatment of use cases presents an iterative approach to use cases along with numerous examples.

Applying Use Cases: A Practical Guide, Geri Schneider and Jason Winters

Advanced Use Case Modeling: Software Systems, Frank Amour and Granville Miller

White Paper from Rational
Describes the relationship between features and use cases with a brief discussion of the importance of separation problem from solution domain and tracing requirements.
The Use Case Zone
Links and information on use cases.
www.pols.co.uk/usecasezone

User-Centered Requirements and Design
Software for Use: A Practical Guide to the Models and Methods of Usage Centered Design, Larry Constantine and Lucy Lockwood
This book provides a complete approach to requirements modeling that is focused on user tasks.
www.stickyminds.com/books.asp?ObjectId=323&ObjectType=BOOK&Function=edetail

The authors provide their approach to requirements and design that involves "in context" interviewing (watching and questioning users in their actual workspaces) followed by modeling workshops and interface prototypes.

This book describes the authors' scenario-based engineering process, which centers on user scenarios elicited via workshops, interviews, and field observations.

The Constantine & Lockwood, Ltd. Web Site
Larry Constantine and Lucy Lockwood's site has numerous articles on use cases and scenarios as applied to user interface design.
www.foruse.com/Resources.htm