

# *AngularJS in Action*



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LUKAS RUEBBELKE  
with BRIAN FORD



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*To my father, Daniel Ruebelke,  
who is the foundation of my life*



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## foreword

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I realized how awesome Lukas was the day we met at ng-europe. After the conference, we started talking more and I participated in a hackathon he organized, and the other way around. The one passion we share, and what has brought us together, is helping people build awesome stuff. I know for a fact that was the reason he decided to write this book. Not for him, but for you!

AngularJS is quickly becoming one of *the* front-end frameworks to use. It's also one of the most rapidly changing frameworks out there. In this book, you'll learn how you can build an exciting application from top to bottom with AngularJS, while learning what controllers, templates, directives, services, factories, and providers are. Instead of an extensive in-depth guide to Angular's features, in this book you'll get a quick glance at what they are and then get your hands dirty so you can learn by using them! You'll learn not only how to code this application, but also how to test it.

Angello is the exciting application—it uses some of the most interesting libraries out there for AngularJS. It's a project management tool very similar to Trello. Throughout the book, you'll learn how to implement the different pieces of this application, and how to use ui-router, Auth0, and Firebase, among others.

I know you'll find this book really useful. Happy hacking!

MARTIN GONTOVNIKAS  
DEVELOPER ADVOCATE, AUTH0



## *preface*

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Never in my wildest dreams did I think that I would be an author, and yet here I am. I vividly remember the panic that I felt as I clicked “Publish” on my first WordPress post on AngularJS. It felt like I was pressing the launch button for a series of missiles, and I had no idea where they would go! Little did I know that I had in fact released a series of missiles that would change my life in the most profound and unexpected ways.

The moment I decided that I cared more about being helpful than being perfect was one of the most important turning points of my life. Beginning with a series of barely passable blog posts, by accepting every opportunity to implement feedback I gradually grasped what it takes to write a solid blog post. It was also during that time that I had the opportunity to become friends with the AngularJS core team. AngularJS at the time was still relatively unknown, and so it was much easier to get on their radar than it is now. Lucky me!

I’ll never forget that afternoon when I got the email asking if I was interested in writing this book. When I was pretty sure that no one was looking, I would break out into this little happy dance for days. If only my high school English teacher could see me now!

From that moment, I have considered it a great privilege to share with you the things I’ve learned while building some large applications and writing untold lines of AngularJS code. It’s been a most excellent journey, and I thank each and every one of you for making this possible!

LUKAS RUEBBELKE

## *acknowledgments*

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This book wouldn't have been possible without the input and support from the amazing AngularJS community. I want to thank Brad Green, Igor Minar, Miško Hevery, Brian Ford, and Matias Niemela for their friendship and for setting such a great example of what it looks like to build awesome things. I would also like to thank Jeff Whelpley, Brandon Tilley, Omar Gonzalez, Martin Gontovnikas, Joe Eames, and about a hundred other people for their feedback. They helped me craft Angello and the book that's built around it. I would also like to thank Geoff Goodman for his contributions on the awesome drag-and-drop example. And I owe Jonathan Garvey a huge debt of gratitude for helping me get this book over the finish line. You are holding this book right now because of his help and tough love. Special thanks to Martin for penning the foreword to the book, and to Brian for his contributions at the beginning of the project.

I especially want to thank my saint of an editor, Cynthia Kane, for her infinite patience, for helping me to become a better writer, and for sometimes nudging me to do things I didn't want to do—like write! Thanks also to everyone else on the Manning team who worked with me during the development and production of the book.

Many people read early drafts of the manuscript and sent in corrections and comments as it was being written, including numerous MEAP (Manning Early Access Program) readers, as well as the following reviewers: Ahmed Khattab, Brian Cooksey, Chad Davis, Daniel Bretoi, Fernando Monteiro Kobayashi, Gregor Zurowski, Jeelani Shaik, Jeff Condal, Jeff Cunningham, Richard Scott-Robinson, Robert Casto, Roberto Rojas, and William E. Wheeler. Thanks to all, with a special acknowledgment to technical proofreader Richard Scott-Robinson, who checked the code and read the manuscript one last time, shortly before it went into production.



## *about this book*

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The goal of this book is to equip you, the reader, with an arsenal of practical techniques that you can use in the real world—to help you build a non-trivial web application from the ground up, and offer commentary on the most pertinent pieces. The sample application presented in the book, Angello, comes with a fully functional back end in either Firebase or Node.js with a few extra bonuses such as social logins with Auth0.

We had to make some hard decisions about what we were going to cover in the book and, more importantly, what we would not cover. It would have been easy to go down a rabbit trail as we tried to explain AngularJS on a molecular level, but the actual application of this knowledge is relegated to edge cases at best. We'll be the first to admit that we don't cover everything about AngularJS—that would make for a book three times the size of what is currently in your possession.

We make some assumptions about the readers of this book so they'll get the most out of the material. We assume a fundamental knowledge of HTML, CSS, and JavaScript. We don't call out the CSS or HTML in the application unless it pertains specifically to what we're doing in AngularJS.

### **Roadmap**

We've divided the book into two main sections: a gentle introduction to AngularJS and then an in-depth commentary on the pieces of AngularJS, as we start to build out Angello.

Part 1, “Get acquainted with AngularJS,” introduces the high-level pieces of AngularJS and talks about what each piece does and how they fit together (chapter 1). To reiterate these concepts, we build out our first AngularJS application, a simplified version of the main sample application, in chapter 2.

Part 2, “Make something with AngularJS,” gets into more advanced and specific topics, such as server-side communication, directives, animations, routing, and forms and validations. In each chapter, we look at the underpinnings of the topic and then see how it appears in the context of a real application. We end each chapter with a discussion on testing and best practices. Chapter 3 discusses how views and controllers work together in AngularJS to control what the user sees, as well as capture user interactions and convey those events for processing. Chapter 4 expands on controllers by introducing services and then showing how to communicate with a remote server using the `$http` service. Chapter 5 introduces directives and shows how directives turn layouts into components while providing complex functionality. We’ll kick our layouts up a notch in chapter 6 by adding in animations using `ngAnimate`. Chapter 7 digs into using routes in AngularJS to deep-link to specific states in the application, preloading specific data using `resolve`, and passing variables from route to route using `$routeParams`. Chapter 8 finishes off with a discussion on how to use form validation to enhance the user experience while providing safeguards around the data being entered.

There are also four appendixes about setting up Karma, setting up a Node.js server, setting up a Firebase server, and running the sample app.

## **Source code conventions and downloads**

The source code in the book, whether in code listings or snippets, is in a fixed-width font like this, which sets it off from the surrounding text. In some listings, the code is annotated to point out key concepts, and numbered bullets are sometimes used in the text to provide additional information about the code. The code is formatted so that it fits within the available page space in the book by adding line breaks and using indentation carefully.

All of the source code for the examples in the book can be found at this Github link: <https://github.com/angularjs-in-action>. The sample application for the book is at this repository: <https://github.com/angularjs-in-action/angelo>. The simplified version of the application is at this repository: <https://github.com/angularjs-in-action/angelo-lite>.

You can also find detailed instructions on how to get the applications up and running in the readme file. Visit the repo often for updates and bug fixes to the project as well as bonus repositories.

The source code is also available for download from the publisher’s website at [www.manning.com/AngularJSinAction](http://www.manning.com/AngularJSinAction).

**NOTE** At the time of this writing, Angular 2 is in an alpha release and not yet ready for writing non-trivial applications. With that said, we’ll be publishing an Angular 2 version of Angello as soon as it makes sense.

## Software requirements

To run the sample applications, you'll need to have Node.js installed. You can find the installation instructions for Node.js at this link: <https://nodejs.org/>. To run the tests, it's also necessary to have Karma installed to execute the unit tests. You can find instructions on how to install Karma at their website: <http://karma-runner.github.io/0.12/index.html>.

We also recommend installing the `serve` npm module, a lightweight web server to display your web applications in the browser: <https://www.npmjs.com/package/serve>.

## Resources

- The most valuable resources for the book are the repositories you will find at the link <https://github.com/angularjs-in-action>.
- You can also see a live version of Angello at the companion site for the book at this link: <http://www.angelloinaction.com/>.
- And you'll find a ton of helpful material at the blog "One Hungry Mind" here: <http://onehungrymind.com/>. Additional content relating to Angello, based on reader feedback, will be posted.

## Author Online

Purchase of *AngularJS in Action* includes free access to a private web forum run by Manning Publications where you can make comments about the book, ask technical questions, and receive help from the authors and other users. To access the forum and subscribe to it, point your web browser to [www.manning.com/AngularJSinAction](http://www.manning.com/AngularJSinAction). This Author Online (AO) page provides information on how to get on the forum once you're registered, what kind of help is available, and the rules of conduct on the forum.

Manning's commitment to our readers is to provide a venue where a meaningful dialog among individual readers and between readers and authors can take place. It's not a commitment to any specific amount of participation on the part of the authors, whose contribution to the forum remains voluntary (and unpaid). We suggest you try asking the authors some challenging questions, lest their interest stray!

The AO forum and the archives of previous discussions will be accessible from the publisher's website as long as the book is in print.

## *about the authors*

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LUKAS RUEBBELKE started programming in 2001 when he discovered Flash. He learned to program in ActionScript 1.0, which is a prototypical language. Almost fifteen years later, he has come full circle as he spends almost all of his time writing JavaScript.

Lukas lives in Phoenix, Arizona, where he is passionately dedicated to the community and cohosts one of the largest meetups in the valley. He's also an avid blogger at <http://onehungrymind.com/> and has spoken at many conferences, including ng-conf, ng-europe, and ng-vegas. He is completely sold on the belief that programming changes lives, and this book is one of the artifacts of his deeply held conviction.

BRIAN FORD is a developer working on the Angular core team at Google. Self-described as often “the most millennial person in the room,” Brian started committing to Angular core while studying Computer Science Engineering at the University of Michigan.

## *about the cover illustration*

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The figure on the cover of *AngularJS in Action* is captioned “Man from Vukovar, Croatia.” The illustration is taken from a reproduction of an album of traditional Croatian costumes from the mid-nineteenth century by Nikola Arsenovic, published by the Ethnographic Museum in Split, Croatia, in 2003. The illustrations were obtained from a helpful librarian at the museum, itself situated in the Roman core of the medieval center of the town: the ruins of Emperor Diocletian’s retirement palace from around AD 304. The book includes finely colored illustrations of figures from different regions of Croatia, accompanied by descriptions of the costumes and of everyday life.

Vukovar is a mid-sized town in eastern Croatia. It has the country’s largest river port, located at the confluence of the Vuka River with the Danube. Vukovar has always been a thriving community due to its fortunate location, and it has served as a gateway to Austria and the west for centuries. The figure on the cover is dressed in his Sunday finery—blue woolen pants, a black woolen vest over a white linen shirt, topped by a voluminous black cloak—all richly adorned with the intricate and colorful embroidery that is typical for this region of Croatia.

Dress codes and lifestyles have changed over the last 200 years, and the diversity by region, so rich at the time, has faded away. It is now hard to tell apart the inhabitants of different continents, let alone of different hamlets or towns separated by only a few miles. Perhaps we have traded cultural diversity for a more varied personal life—certainly for a more varied and fast-paced technological life.

Manning celebrates the inventiveness and initiative of the computer business with book covers based on the rich diversity of regional life of two centuries ago, brought back to life by illustrations from old books and collections like this one.