

# Practical Google Analytics and Google Tag Manager for Developers



Jonathan Weber  
and the Team at LunaMetrics

Apress®

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ISBN-13 (pbk): 978-1-4842-0266-1

ISBN-13 (electronic): 978-1-4842-0265-4

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*To Robbin, whose determination to figure out Google Analytics in its earliest days led to all of this, and whose relentless pursuit of the very best people makes LunaMetrics an extraordinary place to work.*



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# Foreword

A long, long time ago, some smart people understood that distributing water from a centralized place would provide more control and be faster. This was the beginning of irrigation, a more organized and effective way to bring water to plants.

Fast-forward a few thousand years, and some other smart people invented even more advanced ways to irrigate hundreds of millions of acres around the globe. Let's say you own a plantation with multiple crops: coffee (of course!), corn, and soya—each of those plants require a different amount of water and a different amount of fertilizers. Without irrigation, it would be impossible to create and maintain a constant and precise flow of those two essential resources (and others) to your crops in an effective and timely manner.

You are probably asking yourself by now: What is this guy talking about? Well, in the same way that irrigation is used to deliver resources to multiple crops, Google Tag Manager (GTM) is used to deliver different tags to different pages quickly and effectively. So, in our case, instead of crops, we have pages, instead of resources we have tags, and in both we have rules to define what to do in each case.

In the same way that irrigation powered farmers to manage their resources in a more scalable way, so does Google Tag Manager for developers. GTM is a powerful tool that enables multiple professionals from different departments and locations to work together to create and deploy solutions to digital challenges, such as agility and performance.

This is not to say that all problems will vanish and that in three steps you will be rocking the Web; no, GTM is not an Asterix magic potion. As you will learn in this book, creating a powerful GTM implementation requires discipline and hard work, but you will also learn that the hard work will pay for itself many times over.

As Jonathan and the LunaMetrics team accurately and comprehensively describe in the chapters to come, you can do wonders with Google Tag Manager, both when it comes to Google Analytics implementations and other types of data collection.

Now turn the page and put your hand to the plow!

—Daniel Waisberg  
Analytics Advocate, Google





# About the Author



**Jonathan Weber** is the data evangelist at LunaMetrics. He spreads the principles of analytics through training seminars on Google Analytics and Google Tag Manager, and works with clients on challenging strategic issues in measuring and interpreting analytics data. He holds a master's degree from the University of Pittsburgh School of Information Sciences. Away from the computer, you can find him out in the sunshine as a flower farmer and plant geek.

LunaMetrics is a cool Google Analytics Certified Partner and Authorized Premium Reseller, located in the heart of Pittsburgh, PA—one of the US's newly techie towns.

Jonathan and the rest of the team at LunaMetrics are constantly working to make themselves authorities in the area of GTM and GA. The team doesn't really act that nerdy, but they get excited by creating new GTM workarounds and celebrate by playing board games.



# Acknowledgments

There's a reason the cover of this book reads "Jonathan Weber and the team at LunaMetrics", because it couldn't have happened without everyone here. It's a privilege to be able to just pop over to someone's desk and talk over an idea with some of the top folks working on Google Analytics and Google Tag Manager implementations anywhere. The breadth and depth of experience of the LunaMetrics team is the foundation of this book. Thanks especially to Robbin Steif and Jon Meck for their tireless reviews and feedback from front cover to back; again to Jon and to Jimmy Keener for assembling the first drafts of several chapters; to Sayf Sharif and Dan Wilkerson for reviewing technical issues; and to Alex Moore and his entire analytics team here for all of their support, encouragement, and feedback.

Beyond LunaMetrics, there's a larger community devoted to GA and GTM who come together to sharpen our practices and our collective wisdom on these tools, in the Google Analytics Certified Partner program, the Google+ GTM community, and elsewhere. Thanks especially to Simo Ahava for being as obsessed with GTM as we are, and for creating so much valuable writing about it on his blog.

None of this would be possible without the excellent teams at Google working on Analytics and Tag Manager, both past and present. Thanks especially to Paul Muret, who got all of this started way back when; Daniel Waisberg, who penned the foreword for us (and whose excellent book on GA integrations you should also check out); to Avinash Kaushik, for getting so many people excited about web analytics; and to Brian Kuhn and Lukas Bergstrom on the GTM team, who have tirelessly provided support for a new and rapidly developing tool.

And finally, eternal gratitude to Jimmy, who put up with a lot of days and nights of "clicky-clicky" in the quest to finish this book.



# Introduction

## Who Is This Book For?

*“What is the use of a book,” thought Alice, “without pictures or conversations?”*

—Lewis Carroll, *Alice’s Adventures in Wonderland*

Google Analytics is used on millions of websites to measure and understand user behavior. But for many of those sites, implementation of Google Analytics goes like this:

1. Sign up for an account.
2. Paste the tracking code into your site template according to the simple instructions.
3. View site data in reports.

That’s certainly better than no data at all! But stopping your planning there misses many of the most powerful features of Google Analytics (GA): those that customize the data to your organization, your website, and your audience. This book will show you how to measure special interactions, conversions, and other types of data, so that you have reports and analysis with real impact.

One of the hurdles in further implementation can be IT resources necessary to deploy and test tracking code tags on the pages of your website to make additional measurement possible. Google Tag Manager (GTM) helps you overcome this hurdle by managing and deploying those tags from a web-based tool.

GA and GTM go together like peanut butter and jelly. While you can certainly implement all the things in this book without GTM, GTM makes the process so much more streamlined and testable that it’s strongly recommended for all GA implementations. Throughout this book, GTM will be introduced alongside GA features, and you’ll learn about using GTM to implement them.

## Do I Need to Be a Developer?

The title says “for Developers,” but what does that really mean?

Web analytics, by its nature, measures web pages. GA and GTM use JavaScript code to do that measurement. Because of that, you should be familiar with the basic technologies that make web pages work in your browser: HTML, CSS, and JavaScript.

But do you need to be able to sit down at a blank computer screen and code a fully functioning website from scratch? Certainly not. The majority of work you’ll do involves adding a few lines of code here and there to existing, functioning pages in order to measure some element of that page. If your job title is “Developer,” you’ll have no problems, but if you work in marketing, content creation, or some other role, as long as you have some basic HTML skills you should be able to follow along and implement the examples in this book.

## How Should I Read This Book?

Especially if you're just getting started with GA & GTM, *Part I: Implementing Google Analytics with Google Tag Manager* covers the basics you need to know about your implementation and getting the foundations of your website measurement in place, along with the processes for deploying and testing. Even if you have an existing implementation, Part I may provide a good refresher of basics, especially Chapters 3 and 4 if GTM is new to you.

*Part II: Enhancing Website Data with Google Tag Manager* covers a whole variety of additional kinds of data you'll want to send to GA from your website, while *Part III: Collecting Data from Other Sources* provides information about sending GA data from mobile apps, back-end systems, and more. The chapters of Parts II and III are collections of topics for growing and enhancing your implementation that you can approach in any order you like. Pick out the topics that are most valuable or highest priority for you and tackle those first. Chapter 5 is a good starting point, as it covers a number of the most common kinds of additional tracking in GA, as well as general approaches to implementation in GA and GTM. From there, feel free to skip around as your interest or needs dictate.

The *Bonus Chapter: Using GA with BigQuery for Big Data Analysis* provides an overview of the newest way of getting at your GA data, through Google's BigQuery service, enabling deep statistical analysis and data mining techniques on your website data. The *Appendix* provides an overview of GA and GTM APIs for setting up and reporting on your data.

## Links to Resources and Code Examples

Throughout this book you'll find references to the GA and GTM documentation and other resources, as well as numerous code examples. You can also find these, organized by chapter, at this book's web page: <http://www.lunametrics.com/gtm-book/>. This page includes a number of helpful resources, organized by chapter:

- Clickable links to resources referenced in the text.
- Code for example tags and variables in GTM that appear in this book, provided in GTM's import/export format to easily bring them into your own setup.
- Resources to learn more about ancillary topics touched on in GA and GTM, such as regular expressions.
- Links to further relevant examples, beyond those included in the text.

## Summary

- This book teaches you best practices for Google Analytics and Google Tag Manager implementation.
- You don't need to be a developer. You should have a basic understanding of HTML and JavaScript.
- Read Part I for a strong foundation for your implementation, and then pick and choose from Part II and Part III depending on your interest and needs.