

# 2D TO VR WITH UNITY5 AND GOOGLE CARDBOARD

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**ROBERTO DILLON**

# 2D to VR with Unity5 and Google Cardboard



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# 2D to VR with Unity5 and Google Cardboard

by  
Roberto Dillon



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*To Marina (1973–2007) and Davide (1973–2016)*

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# Foreword

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I WAS PROBABLY IN PRIMARY SCHOOL WHEN I STARTED dreaming about making games. In my head, games were made of ideas spawned from the imagination of the game designer, ideas that would be magically implemented in the software by the programming team. I wanted to be a game designer, and I thought programming was not something I had to dabble with.

Later on I found out that entering the game industry as a game designer was quite complicated because of the typical “Catch-22 dilemma:” nobody hires a designer without prior experience in the industry, but at the same time it’s impossible to get industry experience without being in the industry in the first place. For somebody who couldn’t afford to come out of a game design school, this was quite the problem.

My first foray into real game-making was using Adobe Flash around 2007. For the first time, Flash was allowing me to be the game designer, programmer, and even graphic artist, bridging the gap between my ideas and making them a reality that thousands of people could actually try.

The way games are made today is wildly different and this is true mostly thanks to the incredible pieces of software we have available. In time, game engines like Unity, Unreal Engine, Game Maker, Stencyl, Construct (and many others) had expanded on what Flash enabled in the first place, becoming a necessary tool to cope with the ever-changing landscape of platforms, consoles, technologies, and requirements. After Flash, in 2012 I chose Unity as my engine of choice for its flexibility and ease of use, and the huge community and amount of online resources and books available to learn.

I now work at Unity Technologies, and I am amazed every day by how fast the panorama changes and how quickly the company—and thus, the engine—reacts to it. New stores coming out everyday, new platforms, VR, rendering technologies, new controllers, new ways to monetize, a

thousand different devices to support: being able to leave all these technical issues to the engine and focus on the gameplay is the biggest advantage we have over developers making games ten years ago.

With the power of these tools and several excellent didactical resources like the present book written by Roberto Dillon at your disposal, there's no excuse or strange industry Catch-22 to hold you off anymore. You have the potential to create something worthy, something inspiring, or—why not—the next masterpiece game.

**Ciro Continisio**

*Technical Evangelist, Unity Technologies*

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# Introduction

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EVERY DAY SPENT IN THE WORLD OF GAME development seems more exciting than the previous one: new games, new technologies, and groundbreaking ideas seem to pop out of nowhere and amaze us in ways that were thought to be impossible not long ago. This technological revolution we live in was also made possible by the constant “democratization” of development that, thanks to state-of-the-art tools like the Unity game engine, has allowed many people to shape their ideas and create new and astonishing software with relative ease.

Unity itself is in constant evolution: new features are added by a very talented group of engineers, updates follow each other on a tight schedule, and plenty of good books covering different aspects of the engine are already available. Yet I felt there was still room for another volume that, like every good teacher should do, wouldn’t try to teach “everything” that the engine offers today (including features that will doubtlessly become obsolete tomorrow), but would instead impart a thoughtful and sound knowledge enabling students to build a solid foundation upon which they will later be able to expand in the areas they are most interested in—whether mobile development, 2D games, or virtual reality (VR)—while staying up to date with the latest features.

To achieve this, the book is structured into four parts that integrate and complement each other to provide a comprehensive overview of what Unity has to offer. In the first part, after a general introduction, a simple 2D game prototype is explained in detail, giving us the opportunity to get used to several of the engine’s fundamental building blocks, like scripting and Mecanim. Part II expands on the first by building a simple match-3 game to be deployed also on mobile, and Part III, instead, moves into 3D by building a first-person game that will also be experienced in VR through the wildly popular and inexpensive Google Cardboard.

The last part covers some additional topics that will help beginners in gaining a basic understanding of more advanced aspects of game development, like Physics and Shaders, besides offering an overview of the latest features added to Unity 5, like rewarded ads and in-app purchases, which are of fundamental importance to monetize modern mobile games. Example Unity packages based on the various chapters can be downloaded from the website <http://ProgramAndPlay.com>.

Finally, do note that, while this book is aimed at beginning Unity developers, a basic grasp of fundamental programming concepts, like variables, arrays, functions, classes, and so on, is assumed.

Enjoy your journey as a game developer with Unity: remember, we never stop learning, so be curious about anything that happens inside, as well as outside, the Unity community.

I really hope to play some of your own games soon!

**Roberto Dillon**  
*Singapore, July 14, 2016*

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# Author

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**Dr. Roberto Dillon** is the author of several well-received game-related books published by AKPeters, CRC Press, and Springer, including *On the Way to Fun*, *The Golden Age of Video Games*, and *HTML5 Game Development from the Ground-Up with Construct 2*.

He is active both as an indie developer, through his Singapore-based studio, Adsumsoft, and as an academic in the field of game design and development. His games have been showcased at events like Sense of Wonder Night in Tokyo, FILE Games in Rio de Janeiro, and the Indie Prize Showcase at Casual Connect, besides reaching top positions on Apple's App Store and Google Play across several countries and categories.

He is currently an associate professor at James Cook University (JCU) in Townsville, Queensland, Australia, lecturing game design and project management classes. Before joining JCU, he was chair of the Game Software Design and Production Department at the DigiPen Institute of Technology, Singapore, teaching a variety of courses ranging from games history to game mechanics, with his students gaining top honors at competitions like the Independent Games Festival (IGF), both in San Francisco and Shanghai.





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## Our First Game



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