Beginning Samsung ARTIK

A Guide for Developers

Cliff Wootton

Apress®

Beginning Samsung ARTIK

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To my longtime buddy, Pete Willis.

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About the Author

Cliff Wootton is a Royal Television Society (2002) Innovation award-winning former interactive TV systems architect at the BBC, specializing in content management systems and digital video. He was a guest speaker on pre-processing for video compression at the Apple WWDC 2007 developer conference and presented a technical paper on interactive TV systems at the NAB 2003 conference. He has taught IoT, real-world computing with Arduino, multimedia, video compression, metadata, and how to build multimedia art installations at the master's level at the University of the Arts, London. Cliff now concentrates on research and development projects, building digital media tools for creating audiovisual content, multimedia, electronic book publishing, writing, teaching, and playing the bass guitar.

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Foreword

If you follow the tech media at all, you will no doubt have seen plenty of coverage of—and excitement for—the Internet of Things (IoT). The hype surrounding IoT has been palpable. But now we appear to have reached an inflection point, where the hype is becoming reality. IoT is transforming the way people live their lives, with the power to automate, connect, and inform us like never before.

The technology to support IoT is evolving rapidly, with the availability of new, highly-integrated “systems on modules” (SOMs), as well as optimized wireless support and diverse sensor technologies. The most important change however, may be the move back to hardware. Over the past few years, most innovation has been taking place in the cloud and in system software. But with IoT, we are seeing renewed energy and commitment to hardware development. The arrival of low-cost development platforms, such as Arduino and Raspberry Pi, has helped the burgeoning maker community to really take off.

The Samsung ARTIK IoT platform takes this evolution to the next phase with its System on Module (SOM) concept. Designed for both individual developers and those who need it for large-scale production purposes, it features not only the application processor, but also DRAM, flash memory, radios, and advanced security options.

The idea behind ARTIK is simple: reduce the complexity of designing your IoT hardware. Previously, designers often had to do their job twice—once to get a working prototype, and then a redesign for the final production board. With ARTIK, you have the advantage of using the same module in your prototype that you will use in the final production hardware.

Beyond the hardware, the ARTIK platform also delivers a full stack with the latest drivers and tools, as well as a cloud service. And because ARTIK is an open platform, the choice of software is up to you.

As you can imagine, ARTIK is designed to support a broad range of uses, from wearables and products for the smart home to powerful hubs capable of local processing and analytics.

All of us at Samsung are excited to see the creativity that you will bring in leveraging the ARTIK platform, and how your work can change the world around us in positive ways. Of course, having books and documentation to help you get started is always welcome.

We believe that this *Beginning Samsung ARTIK* book and the companion *ARTIK Reference Guide* will provide plenty of inspiration to help you achieve your vision with the ARTIK platform.

—Curtis Sasaki
Samsung ARTIK project leader,
Spring 2016

Introduction

This introductory book will help you start your journey toward becoming an expert ARTIK developer as you develop a new and profitable enterprise.

This book will show you how to set up your own ARTIK development system and get your ARTIK module up and running. Then you can develop your own applications for it. By the end of the book you should have a working system and be able to create and deploy simple applications to your ARTIK module. Then it will be up to you to create something extraordinary. The chapters are arranged in a logical sequence starting with some background information, then how to set up your system, before describing basic programming techniques. External systems such as Temboo and SAMI are covered before rounding things off with debugging and deployment guidelines.

I composed this as I got to know the ARTIK after Glenn Cameron from Samsung kindly sent one to me to work on. As I found out new and interesting things about it, I wrote about what I learned straightaway while the knowledge was still fresh. I tried to maintain the perspective of a new user encountering ARTIK for the first time to avoid making assumptions about what the reader might already know. Some readers will already know about the topics I cover. Even so, the additional background information I provide here will be helpful even to more experienced engineers, designers, makers, and developers.

It is still an early stage in the ARTIK product lifecycle, and many features are still being developed to their full potential. There are topics like video and audio that merit complete books about just that aspect of ARTIK development. Those will come later. For now, it is enough to understand the basics of how ARTIK works so as to have solid foundational knowledge on which to later build the more advanced topics. Some of those topics are mentioned briefly here, but there is not enough space to cover everything in great depth without creating a huge book. For now, let's work on this in more easily digestible stages and get the ARTIK modules up and running first.

The companion *ARTIK Reference Guide* will build on what you learn in this book. It will concentrate on ARTIK internals and provide details for more advanced programming so that you can create more complex applications.

—Cliff Wootton
Crowborough, UK
Spring 2016