

PREFACES

*For both the revised and original editions, explains why you
should consider reading this book*

from

Flexible Product Development

by

Preston G. Smith

Preface to the Revised Edition

Agile software development started and grew rapidly early in this century. But its successes were lost on hardware developers for several reasons. Most of the early applications were business systems: payroll, accounts receivable, and manufacturing planning, for instance. Relatively few manufactured products incorporated software. And—perhaps most importantly—it was clear that agilists were exploiting some special characteristics of the software medium.

Today many hardware products depend on software for their functionality: automobiles, smartphones, and appliances come to mind—even the lowly fever thermometer (remember when it was glass and mercury?).

One consequence of this hardware-software mix is that some hardware engineers find themselves working beside agilists. The perceptive hardware engineer notices that the agilists seem to use “worst practices”: they don’t seem to plan much, and whatever planning they do is constantly changing; they show half-baked prototypes to customers, exposing their ignorance; and they can’t do anything without their pair-programming buddy.

But our hardware engineer is confused, because the agilists have an enviable record of success in time to market, in project budget control, and especially in customer satisfaction. Hence the question: could any of these seemingly worst practices be applied to hardware development to achieve the kind of successes that the agilists have achieved? The answer, fortunately, is yes, and the purpose of this book is to show you how you can join the agilists.

Yet it isn’t a simple matter of learning what the agilists

have done and then doing likewise. This book isn't entitled *Applying Agile to Hardware Development*. The agilists are blessed with a medium—software—that enables the agile techniques they employ. We learn, in Chapter One, what the agilists have done and why they have done it. And then, chapter by chapter, I dissect an aspect of the development process and lay out techniques you can apply to obtain agile-like successes in your market, whether it is in consumer electronics, medical devices, motor vehicles, coatings, or footwear. For instance, you learn from actual development data in Chapter Two why showing “half-baked” prototypes to customers very early in development is a good idea. That chapter, on customers and product requirements, also explains why the so-called “best practice” of frozen product specifications is not only unattainable in practice but also unwise even if it were attainable.

Flexibility and Innovation

Product development is innovation: the introduction of something new. It could be radically new or just a slight variation from your current offerings. Whenever you are working with something new, though, learning is involved—learning about customer desires, new technologies, new testing requirements, new manufacturing problems, and the list goes on. This learning presents us with opportunities to improve the product. But often we decide against applying our learning to make the improvement because it is too disruptive to the project. Our development projects are brittle: they can break if we try to change them in midstream.

Rather than just accepting this brittleness and forfeiting the innovation opportunities presented by your learning, why not make your development process more tolerant of change, that is, more flexible? That is what the agilists have done, and you can do it too for your non-software products by using the tools in this book.

Best wishes as you build flexibility (or agility) to incorporate your learning as you innovate!

Preface to the Original Edition

You may have heard of *Developing Products in Half the Time*, a book I wrote with Donald Reinertsen, originally in 1991. It has become a classic in the time-to-market literature, but many managers report that they have absorbed its lessons. If this includes you, you will be pleased, because this book is the next generation in our quest for responsive new-product development.

We have learned that time to market has many meanings, and the common interpretation as time from the beginning of the project until you ship your first unit may not be an appropriate measure. Specifically, if the development environment is in flux, a better measure might be time from the last point where you can change the design until the first shipment, that is, the design freeze duration. In this case, the later you can make changes, the shorter will be your time to market. Making changes late in development without excessive disruption or cost is exactly the subject of this book.

Such flexibility is increasingly important today, for two reasons. One is that the world in which we live has become more chaotic. It is widely believed that Charles Duell, who was commissioner of the U.S. Patent Office in 1899, proclaimed, “Everything that can be invented has been invented.” But today we find ourselves facing exploding technical change in our development projects. Thanks in part to the Internet, customers have become more sophisticated, more fussy about what they want, and consequently more likely to change their minds—another source of change during development. In addition, the global marketplace

has become more turbulent. Yesterday your competitor was across town and did predictable things, but today your competition is likely to spring from a part of the world that you never thought of as competitive turf before.

The second reason that flexibility has become important is that the management approaches we use today—phased development systems, project office, and Six Sigma, for instance—are all oriented toward planning a project up front, then following this plan. We reward teams for following the plan, and we consider any deviation a weakness. In short, rigidity is encouraged and rewarded. When change happens, our brittle systems are unequipped for it, and managers certainly do not welcome it. This book is about accommodating and even embracing change in development plans.

This may suggest that this book applies to large, mature companies that may be carrying excess baggage. And so it does—but it also applies to small companies where flexibility means survival in their chosen environment. This book will help them focus their flexibility on areas most likely to provide business benefit, becoming truly nimble rather than simply chaotic.

Best wishes in your journey toward flexibility!

Preston G. Smith
New Product Dynamics
Portland, Oregon USA
FlexProdDevel@gmail.com