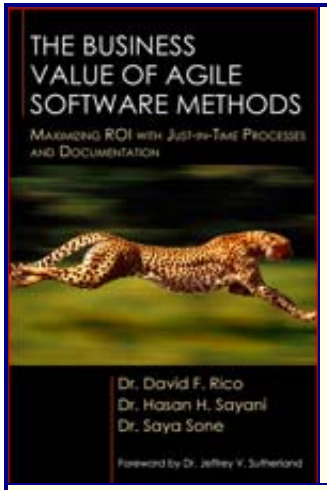

Business Value of Agile Software Methods

Maximizing ROI with Just-in-Time Processes and Documentation

by Dr. David F. Rico, Dr. Hasan H. Sayani, and Dr. Saya Sone

Hardcover: 6 x 9 in., 224 Pages
ISBN: 1604270314
Date: October 2009

Amazon ($49.95): http://www.amazon.com/dp/1604270314
J. Ross ($44.95): http://www.jrosspub.com/Engine/Shopping/catalog.asp?item=14200

About the Book

The Business Value of Agile Software Methods is a comprehensive methodology for quantifying the costs and benefits of using agile methods to create innovative software products. Using cost of quality, total cost of ownership, and total life cycle costs, the authors estimate return on investment and net present value of agile methods. For the first time, the use of advanced measures such as real options is utterly simplified. This book disarms explosive issues related to the adoption of agile methods. It provides a broad survey of cost and benefit data from an analysis of hundreds of projects. It then introduces the industry's first top-down parametric models for estimating the costs and benefits of agile methods. Furthermore, it contains numerous examples on how to estimate the costs and benefits of the major types of agile methods such as Scrum and Extreme Programming, among others.

Key Features

- Identifies the major types and kinds of agile methods, along with the major best practices, as a pretext for mixing and matching them to create super-hybrids.
- Introduces a complete family of metrics and models specially designed for agile methods, rather than saddling projects with traditional industrial-age measures.
- Provides one of the first and only comprehensive compilations of the costs and benefits of agile methods from an analysis of hundreds of real-world projects.
- Presents a suite of top-down metrics, models, and measurements for estimating the costs, benefits, return on investment, and net present value of agile methods.
- Illustrates the first simple-to-use parametric models of real options for agile methods since the inception of the Nobel-prize winning Black-Scholes formulas.

Web Value Added

WAV Offers free downloadable ROI spreadsheet models for Scrum, Extreme Programming, Pair Programming, Test-Driven Development, and Agile Methods (with detailed metrics, models, measurements on the costs, benefits, benefit/cost ratio, breakeven point, net present value, return on investment, and real options of agile methods).

- **Agile Methods Cost & Benefit Metrics**: A complete family of simple-to-use parametric models for estimating the costs and benefits of agile methods (including costs, benefits, benefit-to-cost ratio, return on investment, net present value, and the industry's first parametric forms of real options utterly simplified for executives, managers, and engineers, since the inception of the Black-Scholes formulas 30 years ago). Literally hundreds of key management ratios for estimating economic business value have emerged over the last century. After more than a decade of sorting through the business literature, scientific experiments, and various case studies, we selected a handful of simple, but powerful-to-use metrics, models, and measures for estimating the economic business value of agile methods. These measures were chosen because of their timeless and time-honored characteristics, simplicity to use, and ability to illustrate the business value of investments in agile methods. Some of these measures include costs, benefits, benefit-to-cost ratio, return on investment, and net present value. However, we have also derived a powerfully simple form of real options. Real options are the ideal measure for expressing the business value of agile methods. So, we sorted through hundreds of studies of real options, selected some basic forms, and then designed and illustrated top-down, parametric formulas for real options that anyone can master and use.

Agile Methods Cost & Benefit Metrics

Metric	Definition	Formula
Costs **Sum of Costs**	Costs are all of the expenses necessary to apply agile methods for creating new software products. These may include the expenses for training, materials, coaching, mentoring, consulting, tools, development, maintenance, etc. Training includes fees, travel costs, accommodations, lost work time, and effort associated with performing follow-up exercises. There may be expenses associated with tools to support workflow management as well as software development itself.	$\sum_{i=1}^{n} Cost_i$
Benefits **Sum of Benefits**	Benefits are all of the advantages to be gained from using agile methods to create new software products. Advantages or gains may be tangible or intangible. Traditional methods are reported to have tangible and intangible benefits. These are often in the form of higher quality or improved morale among programmers. However, agile methods have a large impact on both tangible and intangible benefits. One must identify, monetize, and aggregate all of their benefits in order to estimate the business value of agile methods.	$\sum_{i=1}^{n} Benefit_i$
B/CR **Benefit to Cost Ratio**	Benefit to cost ratio is the ratio of benefits to costs. It is a measure of how much money is gained from using agile methods. It measures the economic magnitude of using agile methods. For example, a benefit to cost ratio of one-to-one or 1:1 means that for every dollar spent, one dollar was earned. That's a pretty good economic ratio. What does this mean? Well, in simple terms, a benefit to cost ratio of 1:1 means that for every dollar spent, one dollar in revenue is always earned.	$\frac{Benefits}{Costs}$
ROI **Return on Investment**	Return on investment is a common way to measure the business value of agile methods for creating new software products. It is the oldest and most often cited method for valuating or measuring the economic efficiency of agile methods. It takes both the costs and benefits of agile methods into consideration when determining their business value. In other words, it doesn't just consider the costs or just consider the benefits. But, it considers both of them simultaneously. In basic terms, it is a simple ratio of benefits to costs.	$\frac{Benefits - Costs}{Costs} \times 100\%$
NPV **Net Present Value**	Net present value is a preferred way of measuring the business value of agile methods for creating new software products. It is considered one of the most responsible methods of measuring the economic efficiency of agile methods. There are many similarities between net present value and return on investment. First, both formulas use costs and benefits as an input. Second, both formulas subtract the costs, before stating the benefits. However, net present value takes two additional inputs: (1) discount rate and (2) time.	$\sum_{i=1}^{Years} \frac{Benefits_i}{(1 + Discount\ Rate)^{Years}} - Costs_0$
ROA **Real Options Analysis**	Real options are a better way of measuring the business value of agile methods for creating new software products. It is a contemporary approach for measuring the economic efficiency of agile methods. It is not very similar to either return on investment or net present value in terms of its design. But, it does have similar inputs to both, namely costs and benefits. And, it has similar inputs to net present value, such as discount rate and time. However, real options have an additional input that net present value doesn't have (e.g., risk).	$N(d_1) \times Benefits - N(d_2) \times Costs \times e^{-Rate \times Years}$

$$d1 = [\ln(Benefits \div Costs) + (Rate + 0.5 \times Risk^2) \times Years] \div Risk \times \sqrt{Years},\ d2 = d1 - Risk \times \sqrt{Years}$$