



A Practical Approach to Large-Scale Agile Development

**How HP Transformed
LaserJet FutureSmart Firmware**

Gary Gruver • Mike Young • Pat Fulghum

Agile Software Development Series

**Alistair Cockburn and Jim Highsmith,
Series Editors**

A PRACTICAL APPROACH TO LARGE-SCALE AGILE DEVELOPMENT

Practical Approach to Large-Scale Agile Development, A: How HP Transformed LaserJet FutureSmart Firmware

Table of Contents

Contents

Foreword

Preface

Chapter 1 Agile Principles versus Practices

The Principles of the Agile Manifesto

Our Take on Agile/Lean Principles

A Quick Tutorial: Agile versus Waterfall

Summary

Chapter 2 Tuning Agile to Your Business Objectives

Background: HP FutureSmart Firmware Case Study

Cost and Cycle-Time Drivers Prior to HP FutureSmart
Firmware

Value Proposition of Re-Architecting the HP FutureSmart
Firmware and Processes

Establish Development Objectives from the Business
Analysis

Summary

Chapter 3 Aligning Architecture with Business Objectives

Table of Contents

Challenges with Existing Architecture

Architecting for the Business: Dynamic Variability and Forward
Compatibility

Keeping an Architecture Current and Sustainable

Summary

Chapter 4 How to Establish a New Architecture Using Agile Concepts

Re-Architecting Iteratively

Making Progress

The Thin-Slice Model

Creating Cultural Shifts Through Architectural Demos

Summary

Chapter 5 The Real Secret to Success in Large-Scale Agile

Change for Peoples Sake

Metrics Are a Conversation Starter

Iterative Model of Agile Management

Mini-Milestone Objectives

Cascading Objectives to Track Progress

Conversations

Learning

Agile Adjustments

Summary

Chapter 6 Continuous Integration and Quality Systems

Reducing Build Resources and Build Time: Continuous
Integration

Table of Contents

Achieving High Quality with CI: Automated Multilevel Testing

L0 Testing

L1 Testing

L2 Testing

L3 Testing

L4 Testing

Continuous Improvement of the Deployment Pipeline

Productivity Results of Our Automated Delivery Pipeline

Special Considerations for Enterprise Software Systems

Summary

Chapter 7 Taming the Planning Beast

Predict by Ballparking and Trend Watching

Ballpark Prediction: R&D Early Response to High-Level Initiatives

Trend Watching: Quick Response to All Feature Requestors (Where
They're Likely to Land)

Clear Prioritization

Just-in-Time User Story Definition

Invest in System Engineering

Put Marketing in Charge of a Unified 1-N List

Involve the Technology Architects

Use Project Managers as Feature Leads

Reuse Requirements and Test Tags for Scalability

Commit by Delivering, Not by Estimating

Convincing the Business: Agile Planning Is Okay

Summary

Chapter 8 Unique Challenges of Estimating Large Innovations

Table of Contents

Waterfall Approach and Challenges

Agile Approach

Challenging Situations with the Agile Approach: Large
Architectural Efforts

Change Management and Integrating with the Business
Summary

Chapter 9 Our Take on Project Management for Large-Scale Agile

Oversight and Priority: Program Managers

Accountability: Section Managers

Robustness and Scalability: Architects

Putting It All Together

Summary

Chapter 10 Organizational Approach: Managing to Disadvantages

Test Ownership Organization

Component versus Feature Organization

Traditionally Managed Project Teams versus Self-Managed
Scrum Teams

Summary

Chapter 11 Effective Agile Development across U.S. and Indian Cultures

Lesson 1: Permission to Ask

Lesson 2: Ensure Time to Explore

Lesson 3: Have Small Wins First

Lesson 4: Exploit the Time Difference

Table of Contents

Lesson 5: Take Time to TrainAlways

Lesson 6: Remember a Team Is about People

Organizing for the Highest Leverage of Offshore Teams

Summary

Chapter 12 The Right Tools: Quantum Leaps in Productivity

Common Development Environment

Simulation and Emulation Environment for Automated
Testing

Test Architecture for Scalability: Common Test Framework
(CTF)

The Most Important Part of Test Automation: Virtual
Machine Provisioning System (VMPS)

Real-Time Metrics and Tracking

Integrated Toolset

Cool Toys Worth Investing In

Summary

Chapter 13 Real-World Agile Results: HP FutureSmart Firmware

Resources Moved from Overhead to Innovation

R&D and Developer Productivity

Improvement in Current Product Support

Summary

Chapter 14 Change Management in Moving Toward Enterprise Agility

Impacts on Other R&D Groups and System Qualification

Impacts on Product Program Teams

Table of Contents

Impacts on Non-R&D Product Generation Activities/Teams

Where to Draw Boundaries with Coordinating Organizational Agility

Change Management of the HP FutureSmart Firmware
Transformation

Summary

Chapter 15 Differences in Our Perspective on Scaling Agile

A Difference in Perspective

Focusing on Agility Rather Than Team Operations

Changing the Deployment Pipeline

Embracing the Uncertainty of Agile

Enterprisewide Tracking and Incremental Improvements

Summary

Chapter 16 Taking the First Step

Figuring Out First Steps

Whats Next for FutureSmart?

Determining Your First Steps

Summary

Appendix A: Twelve Principles of Agile Software

Bibliography

Index