Step-by-Step

MAHD

Modified Agile for Hardware Development

The Smart Coffee Maker Project

Part 1 of a 9-part series to walk through an agile development project from concept to launch

Step 1:

Starting Your Agile Project

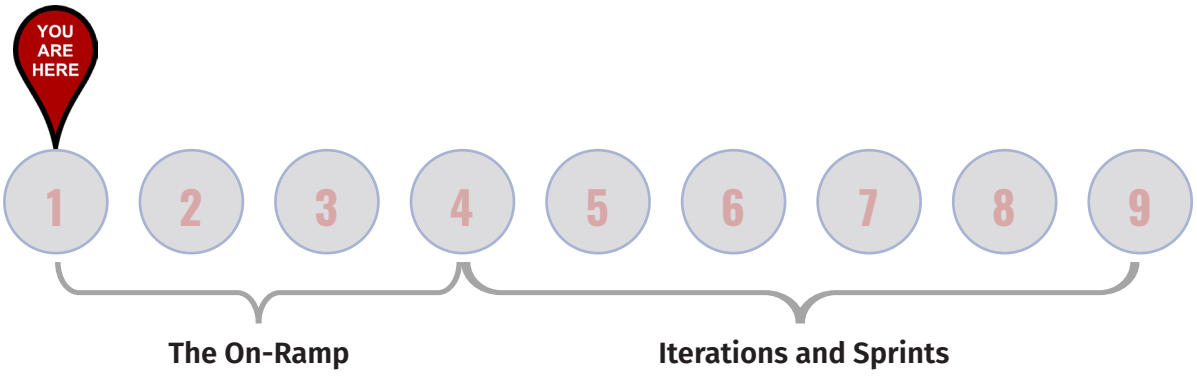
By Dorian Simpson and Gary Hinkle

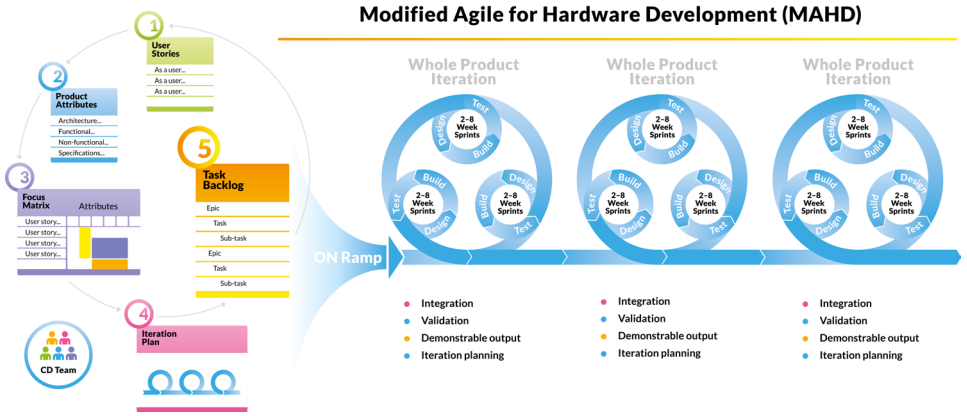
A Quick Intro to MAHD

Agile methods have proven superior over traditional product developement processes to quickly adapt to customer needs, reduce waste and accelerate development. However, the application of agile requires significant changes to support the needs of hardware products. This led to the development of the Modified Agile for Hardware Development (MAHD) Framework — an open-source initiative to embrace the principles of agile while recognizing hardware's unique needs.

THE COFFEE MAKER PROJECT: STEP-BY-STEP AGILE IN NINE STEPS

To help hardware development teams visualize agile in action, we have developed a series of nine articles to explain how agile methods can be used for physical products, who should be involved, the deliverables for each step and how to overcome challenges. We hope you'll join us on this journey as JavaBrew uses the MAHD Framework to develop an innovative new coffee maker.





The MAHD Framework: Similar to Agile for Software, but with Important Differences

Learn More

To learn more about the MAHD Framework, download related ebooks and whitepapers, or sign up for e-learning opportunities, visit [www.agileforhardware.org.](http://www.agileforhardware.org)

STEP 1: SITUATION

Step 1: Getting Your Agile Project Started

THE SITUATION

Lynda is a Product Manager for JavaBrew Coffee. They are makers of premium coffee-making devices who target high-end consumers. JavaBrew is behind in the "smart" category of the market – coffee makers that leverage smartphone apps, connectivity and emerging voice capabilities. To catch up, they need to develop a new line of smart coffee machines. Lynda is ready to kick off the project to develop the first product on the roadmap.

However, Lynda has a problem. At JavaBrew, developing a coffee maker typically takes over two years from project start to first production. She needs a product that includes a significant advancement in technology in 18 months to hit the 2020 holiday season. To shorten their development cycles, JavaBrew is adopting agile principles using the MAHD Framework. While some people in the company are skeptical, many believe that with agile, they can hit the schedule with the right product.

To kick off the agile project, it is now Lynda's responsibility to help the team understand the project and provide information the development team will use to get started. Her first task is to develop an "Agile Product Brief" to summarize the market situation, clarify the customer, establish project goals and begin to define the product through user stories. To get started, she identified the high level value drivers that lead to purchase in the market she is targeting. She knows that "smart" cannot just be about technology, but must focus on delivering new capabilities that customers will find valuable.

Value drivers (reason to buy):

- Attractive design: Pleasing, fit with decor, clean, modern
- Quality of coffee: Taste, consistency, flexibility
- Long term experience: Maintainable, functional, durable
- Smart: Easy, cool, intuitive, new use cases

The Team

Throughout the steps, you'll meet a variety of team members involved in the project:

Lynda - A seasoned product manager who owns success of the product.

Jordan - An experienced project manager who owns the project, deliverables, schedule and budget.

Jim - The VP of Engineering who has spent his career developing appliances.

Juanita - The CEO charged with delivering growth to her stakeholders.

Alec - The Director of Software and Apps who recently acquired new responsibilities for "smart" applications.

Frank - Head of Design and Mechanical Engineering.

AGILE ACTIVITIES

The project is just getting started with the MAHD Onramp. While JavaBrew would typically develop a detailed Product Requirements Document (PRD) that might take two to three months (or longer as they negotiate product features with the R&D group), agile requires a faster, lighter approach to getting the project started. Lynda starts by developing a deep understanding of the market and customer. Instead of a PRD, she develops a short Agile Product Brief (shown in Exhibit 1) to communicate the market situation and project goals.

In each future step, the team knows that to stay on track and be "agile," they must also consider each of these elements. We'll revisit these in each step.

Prototypes: The team will need a rapid prototyping strategy to validate attributes and features from both technical and customer acceptance perspectives.

Customer Engagement: Target customers must be identified and engaged early in the process to learn quickly if they are on the right track.

Decisions: Tough decisions will need to be made throughout the development process as tradeoffs are made and the product is refined.

STEP 1: OUTCOMES

The following two Exhibits show the documents Lynda prepared for the agile project kick-off discussion. She knows her information is not perfect, but has confidence the details will continue to get refined throughout the agile process.

Exhibit 1: Agile Product Brief

The Agile Product Brief describes the target market and customer value drivers as well as business goals such as price, margin and sales targets.

Exhibit 2: User Stories

The users stories describe the product from the *customer's* perspective. As Lynda worked on these user stories, she wondered, “Are these too high level? I know these are what customers want, but will the R&D team have enough information to get started? They don’t even describe the “smart” attributes of the product!” She decides to keep them high level for now to begin the discussion.

NEXT STEP

Once Lynda has successfully gained management support for the product’s goals, she is ready to work with the project manager, Jordan, to set up an agile project kick-off meeting. In this upcoming step, the development team leaders will review Lynda's product goals and user stories, organize the team and prepare for iteration planning.

EXHIBIT 1

Exhibit 1: The Agile Product Brief

Describing the Market, Project Goals and Target Customer

Market Overview

- Voice-enabled devices are growing. After 2 years are already in 24% of US homes
- Amazon Echo dominates the market with 75% penetration
- Smart coffee maker category growing 22% YOY
- Many makers are adding “smart” features – only one is voice-enabled today

Target Customer

- US home consumer (to start)
- Primary target: Male, 25 to 40 years of age, household income >$150K/year
- Tech savvy: Premium smart phone owners, smart device users
- Coffee lovers: Drink 2-5 cups of coffee/day. High quality. Personal bean preference.

Value drivers (reason to buy):

- Attractive design: Pleasing, fit with decor, clean, modern
- Quality of coffee: Taste, consistency, flexibility
- Long term experience: Maintainable, functional, durable
- Smart: Easy, cool, intuitive, new use cases

Launch Goals:

- Retail Price: $299
- Wholesale price: $170
- Target cost: $100
- JavaBrew Margin: ~40%
- Target launch: July 31, 2020
- 2020 Unit target: 15,000 units

Product-market Positioning

- Initial JavaBrew product to enter smart market, roadmap adds product SKUs
- High value, premium product based on intelligent functionality and design not just being “smart”
- "JavaBrew's Smart Coffee Series delivers amazing coffee exactly how you want with an intelligent and intuitive design"

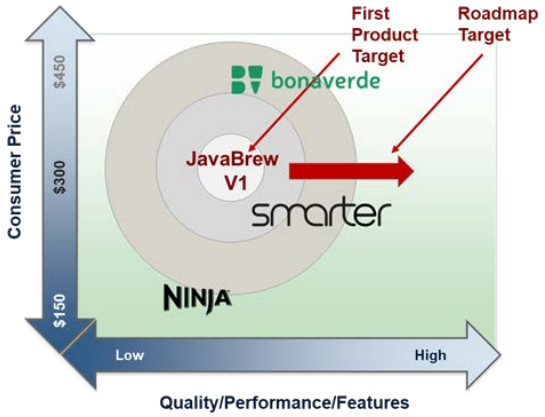


EXHIBIT 2

Exhibit 2: User Stories

Describing the JavaBrew Smart Maker from the customer perspective

As a...	I want...	So that...	Pty.
Consumer	... an attractive appliance	... it looks good on my counter and I can be proud of my investment	H
Consumer	... a choice in colors	... it matches my tastes and decor	M
Consumer	.... to easily clean the appliance, or better, not have to clean it at all	... I can save time and energy	M
Consumer	... to automatically add coffee and water as needed	... I don't have to fuss with these when I want coffee	H
Consumer	... to avoid using filters	... I don't need to worry about buying them or running out	H
Consumer	... the appliance to be reliable	... I don't spend time "debugging" my coffee maker	H
Consumer	... the coffee to stay hot (and not burn it.)	... it's ready when I want at the perfect temperature	H
Consumer	... to control the strength of the coffee	... I can decide the taste for myself and others in the house	M
Consumer	... to make as many cups as I need	... to not waste coffee or have enough based on the situation	M
Consumer	... to easily control all functions of the maker	... I don't need to read the manual, waste time or get frustrated	H
Consumer	... to control the timing	... I can have coffee exactly when I want it	H
Consumer	... set the maker from anywhere in my home	... I can make coffee while working, watching TV or anything else	H
Consumer	... set the maker while I'm not at home	... I can have coffee ready for me when I want and set it whenever I want	M
Consumer	... to add coffee and water easily	... I save time and ensure the maker is ready when I want it	M
Consumer	... to ensure the coffee and water are fresh	... I always have the best quality coffee possible	H
Retailer	... to have no product returns	... I don't have the expense and headache of returns	H
Retailer	... the maker to be self-explanatory	... I don't have to take time to educate consumers	M
Retailer	... accessory sales	... I can make money after the initial purchase	L

ABOUT US

To Be Continued...

GET THE SERIES

To see the previous steps and receive each new step of this project as it is published, visit **www.AgileForHardware.org**. Each step will be available for download and sent directly to your email.

ABOUT THE AUTHORS

The MAHD framework is an open-source process, available for all to use, build on and improve. We look forward to hearing from you and your experiences with agile, waterfall and other processes. The MAHD framework was developed by Gary Hinkle and Dorian Simpson to address the needs of hardware development.

To learn more, get involved, or just join our community for discussion, visit:

www.AgileforHardware.org

About Gary Hinkle

Electronics, mechanical and software engineering are all part of Gary Hinkle's background, working in design, management and executive leadership of communication, industrial, telemetry, audio, avionics, computers, test & measurement, among other industries. Today, he's principal consultant at Auxilium, a company he founded to help engineering-oriented businesses increase productivity.

Contact Gary

W: www.Auxilium-inc.com
P: 971-222-6234
E: gary@auxilium-inc.com

About Dorian Simpson

Dorian Simpson is an innovation and product development consultant, trainer, speaker and author of *The Savvy Corporate Innovator.* Companies he's worked with include ABB, Tyco, Owens Corning, Technicolor, FEI, VTech and Freightliner. Before consulting, Dorian held positions at Motorola and AT&T in product management, sales, marketing, business development, and engineering.

Contact Dorian

W: www.KingsleyInst.com
P: 971-235-4905
E: dorian@kingsleyinst.com

Kingsley Institute
for Strategy and Innovation

Auxilium