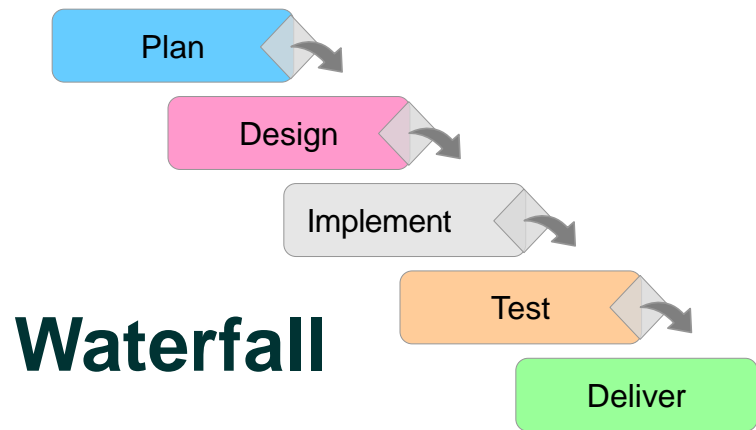
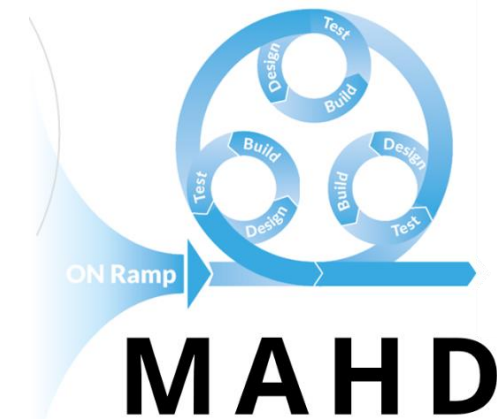


10 ADVANTAGES OF AGILE FOR HARDWARE OVER WATERFALL DEVELOPMENT



VS.

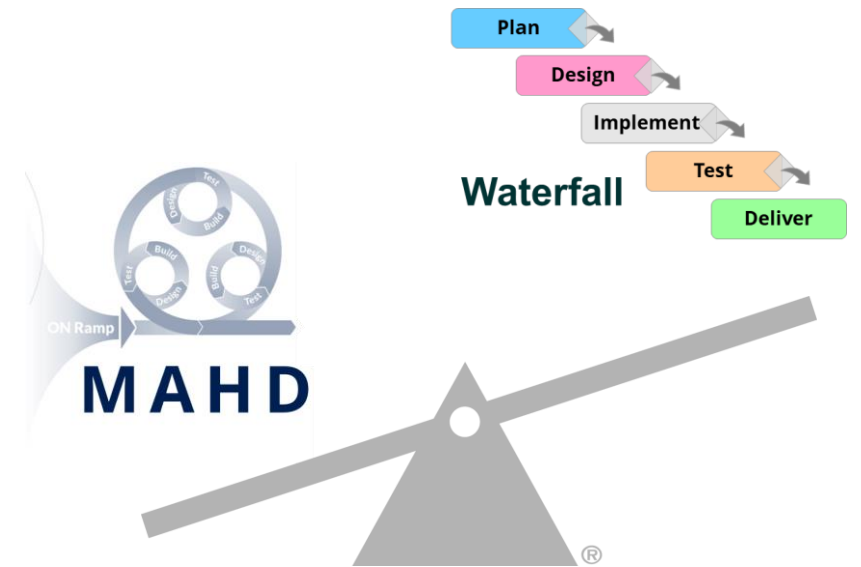


Introduction

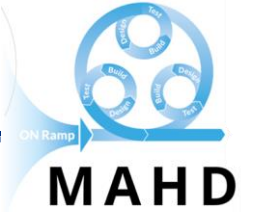
After executing 100's of product development (PD) projects, training 1000's of PD professionals, and consulting with dozens of companies using the spectrum of PD processes, we learned a few things...

- 1) Waterfall (e.g., phase-gate/stage-gate) PD systems struggle to meet today's real-world needs for speed and adapting to change. They are often slow, contentious, rooted in wishful thinking and frustrating.
- 2) Agile fixes many of waterfall's problems, but when agile methods are applied to hardware products there are gaps.
- 3) With some minor modifications, Agile can successfully be applied to hardware and ***provide real and almost immediate benefits.***

Below we share the top 10 advantages that agile methods and the Modified Agile for Hardware Development (MAHD) Framework have over typical waterfall methods.



So... Imagine...



Your company is planning to develop a new “smart” energy-efficient home electric standby generator. You have some basic goals:

1. It is innovative!
2. It is ready for sale in 18 months
3. It is profitable (at least 40% GM)
4. It can wholesale for <\$2500 USD
5. It sells well (target 20,000 units/year)



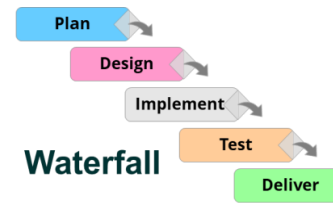
(For visualization of the concept only. At this point, we have no idea what the final product will look like!)

Which Approach do You Think Will Lead to Success?

MAHD Advantage #1

Much Faster and Focused Project Kickoffs

The MAHD On-ramp provides a more complete view of the project in a fraction of the time without the reliance on a magic crystal ball. The learning process starts immediately.



- Detailed business case
- Complete product requirements
- Lengthy R&D scope negotiation



3-6 Months



- Light business case
- User stories / Preliminary attributes
- Mktg/R&D collaborative kickoff

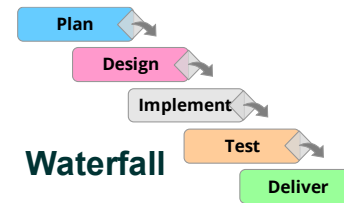


2-3 Weeks

MAHD Advantage #2

Massively Enhanced Cross-functional Collaboration

The MAHD Framework starts with collaborative discussions of critical project elements – customer needs, risk, innovation, schedule, targets, resources – and continues collaboration on a consistent cadence.



- Over the wall requirements
- Opinion-led tradeoff discussions



“Do this!”



- Common integration points
- Collaborative, real-time decisions
- Customer-driven discussions

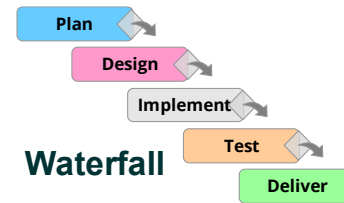


“Customers said...”

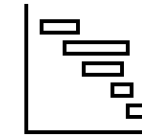
MAHD Advantage #3

Clear, Proven Development Progress

MAHD IPAC Iterations deliver a clear understanding of tangible project progress through demonstrated prototype functionality and feedback with throughout the development process.



- Schedule-based progress
- End-of-project validation



“It’s Coming!”



- Demonstratable progress
- Prototype-driven feedback points

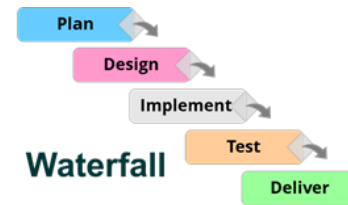


“Here’s what works!”

MAHD Advantage #4

A Healthy Sense of Urgency

Short term milestones mean procrastination is minimized. Each MAHD Iteration results in a commitment to deliver real work. It's like a manageable tradeshow every Iteration vs. a heroic waterfall end-of-project effort.



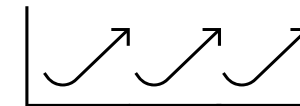
- Major work (& risk) pushed to end
- Resource needs detected too late



“We can’t do that.”



- Sense of urgency every sprint
- Resource needs identified early

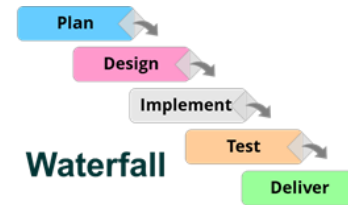


“We can do that!”

MAHD Advantage #5

Built-in Coaching and Mentoring

Individual & team commitments to iteration deliverables quickly identifies anyone who is struggling. By pairing experienced team members with those needing help, both are given professional development opportunities.



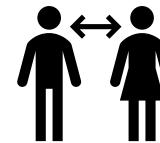
- Individuals rely on busy managers
- Months before problems surface



“That’s *your* job.”



- Peer support helps all succeed
- There is no place to hide

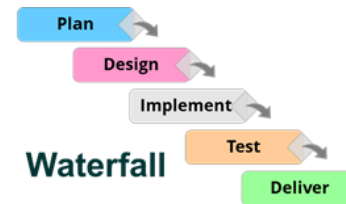


“Let’s figure this out.”

MAHD Advantage #6

Early Focus on Critical Areas of Risk & Innovation

At the core of the MAHD Framework is the early identification of where innovation will lead to market success or risks will lead to failure. This provides early focus to correct problems, add resources or find experts.



- Critical decisions are pushed out
- Little data to drive “good enough”... so opinions prevail!



“We’ll see if there is time for that.”



- Risk/innovation tackled early through real investigation
- Risk decisions made w/real data

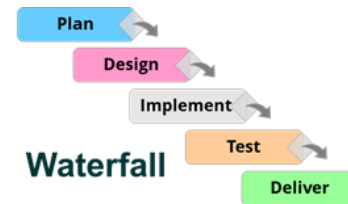


“How can we get this right?”

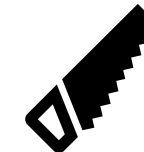
MAHD Advantage #7

More Intelligent (and Early) Trade-off Decisions

With a consistent focus on demonstrable progress and learning through customer feedback loops, data is gathered early for faster and better resource/scope/schedule tradeoff decisions.



- Tradeoffs made in later stages
- Adding resources late rarely helps



“We’re Late, What Should We Cut?”



- Tradeoffs assessed each iteration
- Early decisions driven by real data

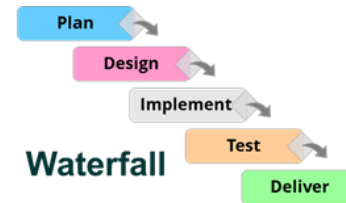


“How Should We Optimize?”

MAHD Advantage #8

Real Customer Engagement

Each IPAC Iteration in the MAHD Framework provides customer engagement opportunities to test product concepts and functionality. This real customer feedback then drives priorities and decisions with data instead of opinions.



- Real testing AFTER project complete
- Too late to make significant changes
- Product often misses market target



“Did customers like the product?”



- Customer insight built into iterations
- Incremental testing to adapt fast

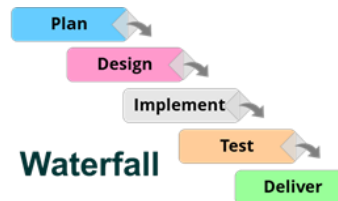


“How did the prototype demo go?”

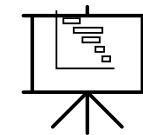
MAHD Advantage #9

Smarter Management Conversations

Traditional Gantt charts and presentations make it hard to understand the true status of a project. MAHD's IPAC iterative execution and learning cycles drive meaningful senior-level discussions throughout the project.



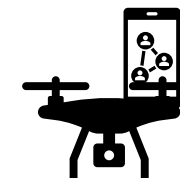
- Status limited to project updates
- Projects nearly complete before real information is uncovered



“80% done! Trust us.”



- Management sees early progress
- Redirection occurs at any iteration

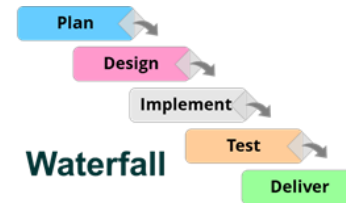


“Join our next demonstration!”

MAHD Advantage #10

A Happier Development Culture

Agile overall has been shown to provide a healthier, happier environment due to its inherent focus on peer engagement and support along with consistent doses of small wins.



- Long periods with little interaction
- Individuals can feel isolated



“Anyone out there?”



- Consistent interaction with peers
- Celebrate small milestones versus just the BIG launch



“Let’s Celebrate!”

But What About???



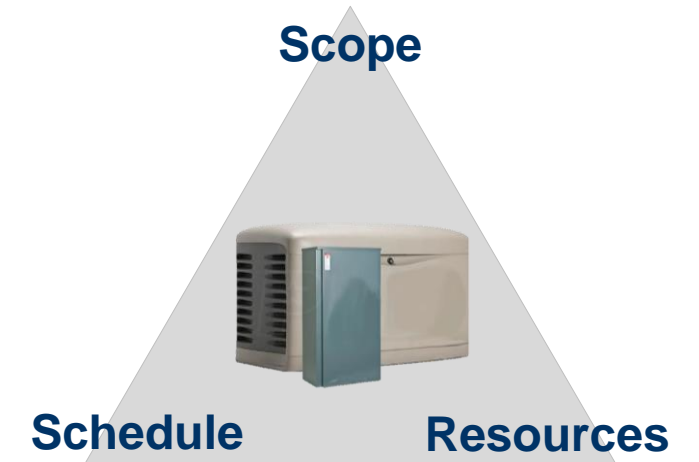
You may have asked... What about...

- Massively saving development **time**?
- Dramatically reducing **resources**?
- Ensuring **perfect products** every time?

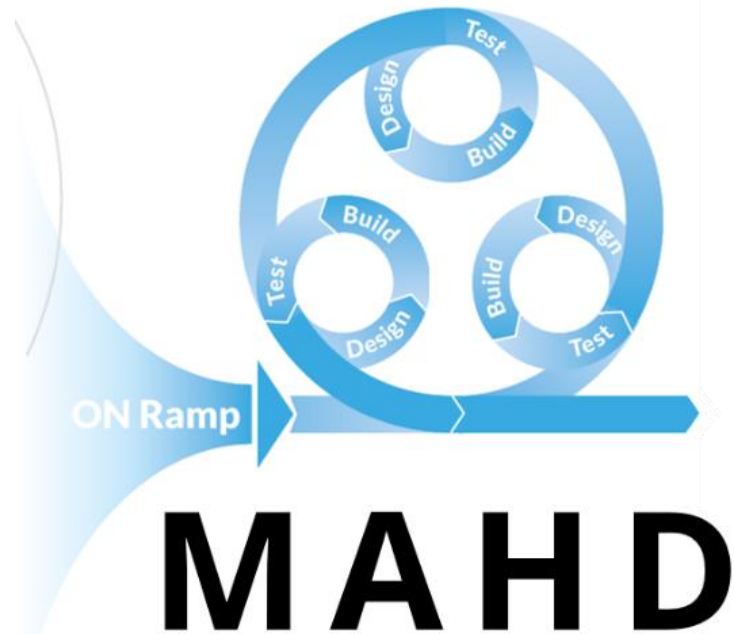
Aren't these the **real benefits** we seek?

Yes! Agile and the MAHD Framework have been proven to provide these benefits, but they are just **tools**.

Every project has scope, resource and schedule limitations. MAHD gives you the methods to optimize these tradeoffs **based on your development goals**.



**What Are
Your Goals?**



To Learn More...

Visit: www.mahdframework.com

- E-books and resources
- Workshop schedules
- Step-by-Step MAHD
- Certified MAHD Service Providers