

Product Realization Group
Webinar Series

Agile Product Development

.... Annuvia case study – “sprinting” to prototype

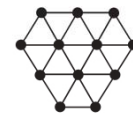
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Product Realization Group[®]
Bridging the Product Development Gap

Where does Development Fit?

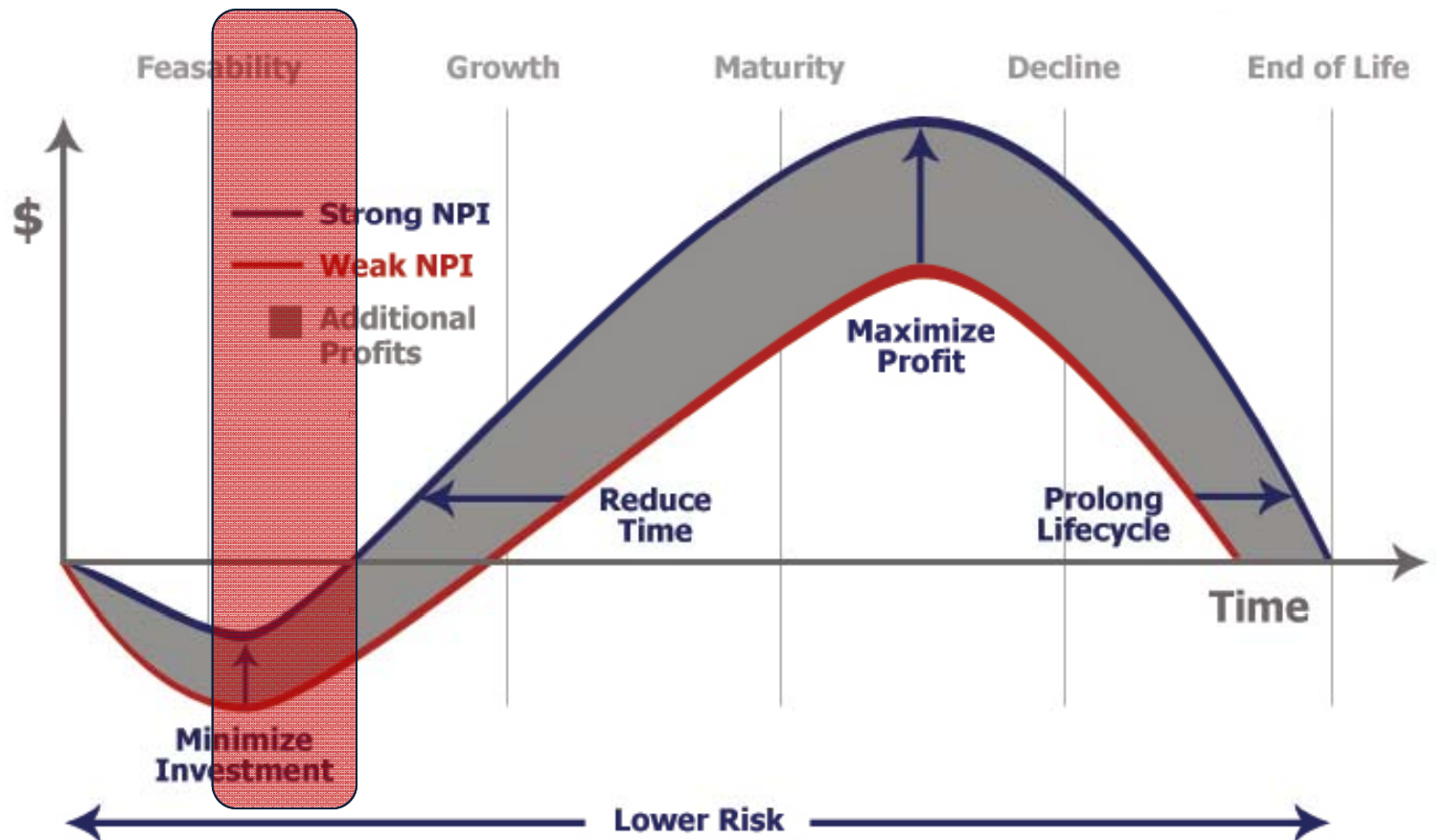
Product Lifecycle

Follows a product from concept to end-of-life



Development is a subset of the product lifecycle, and focuses on building the **readiness to move a product from Feasibility into Beta**

Impact of Development in the Product Lifecycle

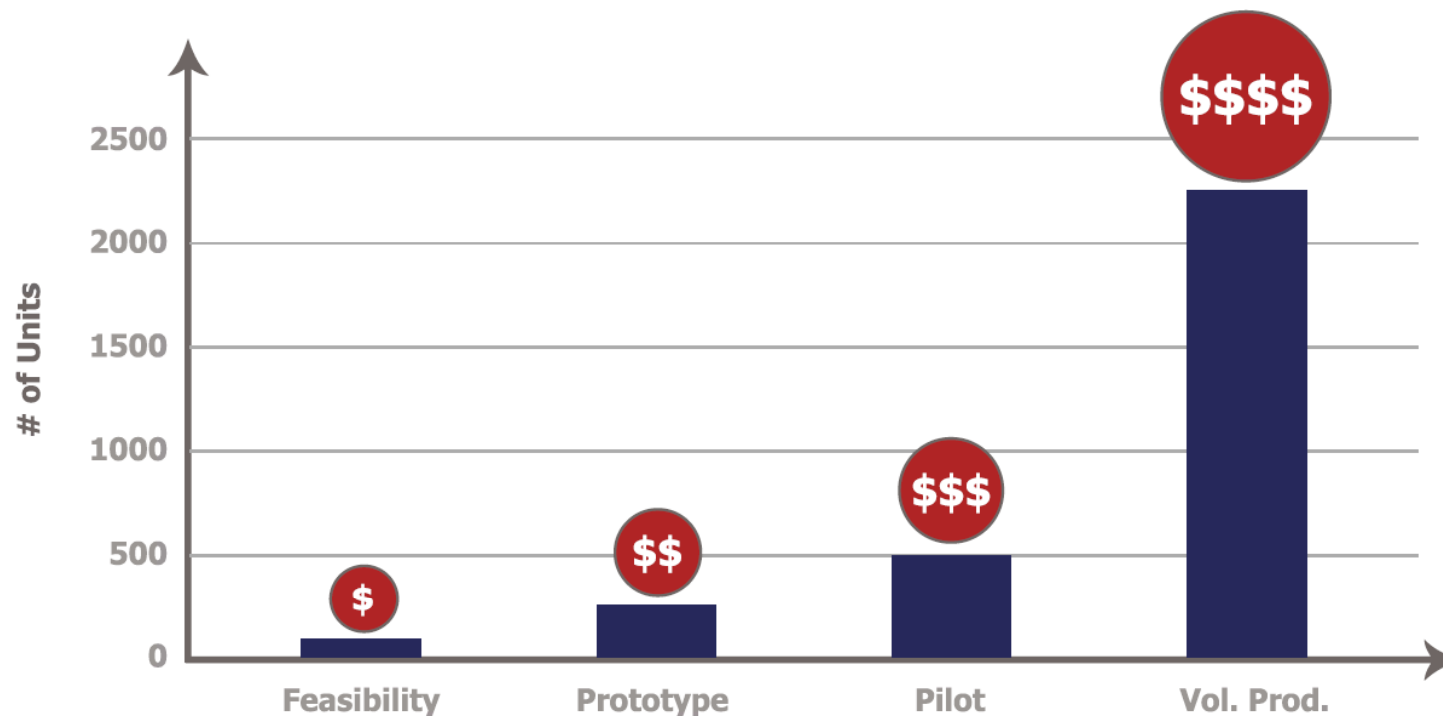


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Importance of Prototype in the Product Lifecycle

Escalator Effect

Cost Escalator Effect



Do it right from the start -
The leverage is HUGE!

Product Feasibility - Recap

Conclusions

- ❖ Determined that product was feasible
- ❖ Completed Product Requirements Document (PRD)
- ❖ Estimated design schedule and cost
- ❖ Agreed to proceed with development

Key Project Participants

Role	Company
Client	
Electrical / Software	
Industrial / Mechanical	
Operations / Supply	
Program Management	

Agile H/W Development Tips

- ❖ Develop in manageable “sprints”
- ❖ Define clear objectives for each sprint
- ❖ Always have contingency plans for potential challenges in each sprint
- ❖ Be prepared to respond quickly to changes or new opportunities



Agile H/W Development Tips

- ❖ Design mechanical parts for long term solution (molding / casting etc.)
- ❖ TEAM
 - ❖ Establish roles & responsibilities (stay flexible)
 - ❖ Obtain buy-in on the BIG picture
 - ❖ Promote open dialogue and brainstorming
 - ❖ Develop trust





BEACON PRODUCT DEVELOPMENT: CASE STUDY

About Annuvia

- ❖ Annuvia has 3 divisions:
 - ❖ National CPR/AED & First Aid Training
 - ❖ AED Program Management Software (Arch)
 - ❖ New “AED Tracking” Product
- ❖ We train ~1,000 people/month across 100+ cities in the US
- ❖ All instructors are full-time healthcare providers
 - ❖ All have years of experience responding to medical emergencies

Go-To-Market Strategy

- ❖ Meet immediate needs of AED owners w/ software
 - ❖ Generate Sales
 - ❖ Obtain a Captive Audience to whom we can sell future products
- ❖ Build a new hardware product to address today's challenges
 - ❖ While encouraging more AED sales
- ❖ Sell hardware to existing install base/current customers

The Beacon: Background

- ❖ Integrates with Arch Software
 - ❖ Turns our “static” database “dynamic”
- ❖ Live Feedback
 - ❖ Automatically “reads” an AED’s status
 - ❖ Accurate AED location/placement data
 - ❖ Notification Instant AED is opened
- ❖ Additional features (remote updates)
 - ❖ Voice to connect rescuer with 911 operator
 - ❖ Temperature monitoring



Challenges in the AED Industry

- ❖ Awareness
- ❖ Legal Compliance & Liability
- ❖ Time to Defibrillation
- ❖ Product Recalls



The Beacon: Addressing industry challenges

- ❖ Automatic readiness checks
 - ❖ Reduction of labor
 - ❖ More accurate records
 - ❖ Reduced liability
- ❖ Precise geo-tracking may cut down on time-to-defibrillation
- ❖ Notify AED owners of recalls
- ❖ Future tools may increase AED usage
 - ❖ "OnStar for AEDs"

Applying Software Dev. Techniques to Hardware

❖ Core Strategy

❖ Address Major Items First

- ❖ Any show stoppers?

- ❖ Can this be done? How?

- ❖ Approx how much will it cost?

❖ Initial Discovery – what methods are best?

❖ Parallel Tracks

❖ How We Organized Our Efforts

- ❖ Parties Involved

- ❖ Schedule

Structure of “Agile” Sprints

- ❖ Approximately 1 month long
- ❖ 30 minute weekly calls
- ❖ Clear deliverables
 - ❖ Important to me that each sprint was tangible – show investors, market, gauge reaction, modify
- ❖ Followed by
 - ❖ 1-3 weeks to plan next sprint (re-coup some cash)
 - ❖ Identify next deliverable
 - ❖ Get and organize quotes from resources

Outline of Agile Sprints

- ❖ Initial Discovery (~2-4 weeks)
 - ❖ Regulatory Constraints: Medical device?
 - ❖ Legal Constraints: Patent opportunities?
 - ❖ General Feasibility: Est. cost, etc. COGS, time requirements
- ❖ Breadboard build and testing
 - ❖ Test theory – led to early Pivot
 - ❖ Test light conditions (mechanical feasibility)
- ❖ Quick Proto
 - ❖ Use actual parts where possible
 - ❖ Refine specs
- ❖ Full Proto

What Worked Well?

- ❖ PRG to organize resources, budget and steer project
- ❖ Avoiding unnecessary meetings
- ❖ Hiring a team that has worked together before
 - ❖ And trust one another
- ❖ PRG as a barrier between me and resources
 - ❖ Avoiding drain on budget
 - ❖ Funneling Q+A

Do Overs

- ❖ Involved another person from my organization
 - ❖ Spread the project knowledge
 - ❖ Get another industry insider's opinion
 - ❖ Kept a closer eye on "normal" operations
- ❖ Raise more money
 - ❖ Not due to increased costs
 - ❖ Development could have gone even faster

Must Haves

- ❖ Project Manager that is accountable to the client and regular status meetings
- ❖ Transparency with our budget and financial position
- ❖ Willingness of the team to do sprints and on/off work
- ❖ Enjoy working with each resource
- ❖ Engagement with VERY experienced people
- ❖ Ask “what if” at every stage
 - ❖ New options, opportunities present themselves (i.e. budget, tech needs, savings, etc)

Process Perspective

Electrical / Software

- ❖ Early use of development boards allowed us to show that the system would work, and that interface specifications were appropriate *in advance* of custom board layout (mitigated risk)
- ❖ The system had to communicate with the existing Annuvia infrastructure; Prototype code running on a PC was used to verify communications, and served as reference code (saved time)
- ❖ Followed concurrent engineering practices, which led to a more manufacturable product (reduced cost)

Process Perspective

Mechanical

- ❖ Able to maintain image quality developed in feasibility phase and transfer into development by leveraging mature technologies
- ❖ Leveraged known technologies for cameras and LED's, which lowered costs and minimize risks
- ❖ Designed for volume manufacturing vs. one off prototype, which saved a design iteration

Process Perspective

Operations

- ❖ A formal NPI process allowed us to:
 - ❖ communicate functional team deliverables
 - ❖ understand the impact of task linkage
 - ❖ respond nimbly to any “pivots”

- ❖ The Agile Development approach enabled:
 - ❖ Early Communications between Product Design, Operations and Suppliers
 - ❖ Identification of potential component pitfalls (availability and functionality)

Process Perspective

Operations

- ❖ By leveraging local Distributors and CM we were able to:
 - ❖ Apply design for excellence (DFX)
 - ❖ Select critical components (and obtain quickly)
 - ❖ Shortened the prototype development time
 - ❖ Achieved product cost and quality goals
- ❖ Incorporating Arena PLM system early in the product lifecycle, we gained:
 - ❖ Clear visibility of design development status
 - ❖ Easy and controlled access of information across all groups

Development Tips: Q&A

- ❖ Develop in manageable “sprints”
- ❖ Define clear objectives for each sprint
- ❖ Have contingency plans defined (FMEA)
- ❖ Respond quickly to changes or new opportunities
- ❖ Design mechanical parts for long term solution (molding/casting etc.)
- ❖ TEAM
 - ❖ Establish roles & responsibilities (stay flexible)
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 - ❖ Develop trust



Speakers

Micah Bongberg

Is the President and CEO of Annuvia. Annuvia is one of the leading health, safety, emergency preparedness, and emergency response organizations in the United States.

Michael Keer

Is the Founder and CEO of Product Realization Group. The PRG enables rapid and cost effective introduction of products to the market, regulatory compliance, manufacturing, service, and lifecycle support.

Speakers

Mark Brinkerhoff, PE

Is the President of Fusion Design. Fusion provides mechanical development services for medical, industrial, recreational and many other product applications.

Stuart Tyrrell

Is the Director of Engineering at Voler Systems. Voler Systems provides electronic engineering services for new product design.

Speakers

Shekar Reddy

Is a Sr. Consultant at Adolph Consulting Services (ACS). ACS delivers virtual VP of operations services to assist companies implement scalable business practices / processes that provide a sustainable competitive advantage.

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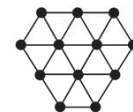
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