Agile's Role in Developing Robust Software Competency in a Manufacturing Company

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Prior to joining Precor, my background includes nuclear engineering in submarines while in the US Navy, and senior-level roles in Product and Marketing with both Kraft and Valvoline. As leader of the Product Group for both commercial and residential product lines at Precor, I have deep experience in manufacturing. As a result of playing an integral part in developing software competency using Agile software development, I have chosen to focus on software and other directly related disciplines (e.g. interaction design, electrical engineering, etc.) and give up other product areas (and marketing) so that we can continue to establish industry-leading software competency to drive innovative products and services.

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Brent Barton, Agile Coach
Brent has an extensive background mentoring people, enabling teams and guiding organizations toward agility. As a former CTO at SolutionsIQ, Brent has unique insights into challenges that emerge from the increased focus and intensity that iterative and incremental development brings to a business. As a Certified Scrum Trainer and Agile Coach, Brent has helped people, teams and organizations adopt Scrum successfully for many years. Brent believes developing great software is both a creative and technically challenging endeavor. If doing it is not fun then something is wrong. We must figure out why it is not and do something about it. Brent’s passion for helping teams and organizations build great software has shown to be a considerable asset for companies he has worked with.

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About Precor’s History of Innovation
Established in 1980, Precor sets the standard for quality, innovation, and performance in exercise equipment. Precor has distinguished itself as a worldwide industry leader, providing state-of-the-art fitness equipment to health clubs, hotels, spas, fitness centers, and private homes all over the world.
Precor is number one in the fitness equipment industry in both product offerings and service quality [Source: 2009 Health Club Equipment Benchmarking Report]. At the same time Precor is a great place to work, as evidenced by honors as a finalist in the Puget Sound Business Journal’s 2010 Washington’s Best Workplaces in the Large Business category.

Precor began by launching the first ergonomically sound rowing machine in 1980, and have been supporting the natural movement of the human body ever since. In 1990, Precor created the first cushioned treadmill. Precor introduced the world to the Elliptical Fitness Crosstrainer™ (EFX®) in 1995. Then in 2007, Precor released the revolutionary Adaptive Motion Trainer® (AMT®), a breakthrough piece of cardio equipment that constantly and fluidly adapts to your stride length and motion.

Precor decided to continue its leadership and innovation by delivering a completely new fitness experience through the use of embedded and networked capabilities. This represents a significant shift from a product mindset to a platform capability for Precor. Software became extremely complex and a critical competency for Precor which was a radical and transformative change. The resultant product from this effort as already been recognized by the Washington Technology Industry Association as a finalist for their “Most Innovative Manufactured Product of the Year” award for 2010 (winner to be announced February 24, 2011). This paper is about the trials and tribulations of developing a whole new competency in software in order to deliver our next level of sustained innovation and competitive advantage.

**Precor’s Decision to Develop Software Competency**

Prior to this next innovation, software was limited to relatively basic user displays and motion controls required for fitness equipment operation. The entire software capability consisted of four people organized into two groups that supported software related R&D and product development/sustaining of fitness equipment. The cost of software was considered to be “free” because ROI had always broken even within months of release. Through much of Precor’s history, manufacturing practices were supplemented with outsourcing. This approach was taken to deliver the new software needs with mixed results.

As progress was being made on the design and prototyping of the next generation of our physical products, the software continued to get further and further behind. It took six months to recognize that software was a huge problem and to take action.

One of the vendors supporting this initiative used Agile software development. I was introduced to Brent Barton by one of my product managers to discuss how we
might address the situation and this is where I learned about Agile, Scrum and Multi-level planning.

**Delivering a Highly Complex Product and our Agile Experience**

Our experience report will include successes and failures in areas including:
- Integrating Real-Time Operating Systems, Highly Interactive Content and HD Television in a single display with overlay and multi-touch capabilities
- Scaling from 3 to 35 people in software development
- Challenges of embedded software
- Board turns and the problems they caused
- Using Scrum at scale with highly dependent teams
- Kanban use
- Scrum in non-software areas to support new platform requirements
- Technical challenges
- Ongoing budgeting from adaptive planning in a down economy
- Business meetings needed to support Scrum
- Painful decisions
- Emergent Opportunities
- Losing transparency and having to re-establish velocity
- Increasing technical practices like automated testing, continuous integration
- Working in an agile way with vendors
- Impacts to manufacturing
- Business evidence of ability to adapt effectively
- Predictability of scope, schedule and cost

**Approaches**

**Role of Agile – Problems it needed to solve**

**Business Impacts**
Need to organize for adaptive planning
Complexity of adaptive planning
Successes and difficult decisions