The Practice of Innovation

Customer-centered Innovation at Pitney Bowes

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Notes and references.

Pat Sachs (Social Solutions) and Gitte Jordan (Institute for Research on Learning) introduced the POSTA framework to me.

The notion of using prototypes as the language of innovation is one popularized by the design firm IDEO.

I attribute this definition of value proposition to Lynn Phillips of Reinventures.

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New product innovation inside large companies often fails. Sometimes it fails spectacularly, with new product introductions that do not achieve traction in the marketplace. Sometimes it fails quietly, with concepts that remain mired in the research labs and never deliver value to the corporation. The conventional wisdom is that this failure is largely inevitable, that innovation is inherently risky. But the innovation process can be made both more productive and more predictable. Making it so requires debunking well-established myths about innovation and, in the end, turning the traditional innovation process inside-out.

Many assumptions about innovation are based on what I call “the myth of the brilliant idea”. This is the belief that at the heart of any new product innovation is the great idea, the inspiration, the spark of genius — usually a moment of insight (Aha!) born of a technological advance. This myth goes hand-in-hand with another: that the business challenge of innovation is selecting among alternative ideas to weed out those that are not worthy of further investment, and to nurture through to product development those that are most compelling. Many corporate innovation processes are designed to conform to these myths: they provide for generating a collection of ideas at the outset, and then qualifying, filtering, elaborating, promoting and developing a few of these ideas. The process is often depicted as a “multi-stage funnel”, which includes a variety of means for canvassing the organization for ideas and a formal stage-gate process for successively filtering the ideas, thereby limiting the investment in “weak ideas” and increasing commitment to a few good ideas as the funnel narrows (Fig. 1, The Funnel Model). The funnel is a model built around the myth of the brilliant idea.

Unfortunately, this just isn’t how successful new product innovation usually works. Dig deeply and honestly into the history of a new product’s evolution and you will find a very different story: one of tacit insights, cross-organizational communication and serendipitous events. Through accident or skill, these contexts enable the full range of business issues required for success to be addressed. Frequently, a raw idea (or several) that had been kicking around the organization will be drawn into the mix and become morphed by the new context of consideration. These stories are not about filtering for great ideas, but about people creating and managing a series of contexts to nurture an innovation.

What are the implications of this view of innovation for the process of new product creation? Can the innovation process be systematically managed to create a compelling new product or service? In brief, can the innovation process be driven by context as opposed to the search for the big idea?
At Pitney Bowes, we are in the third year of using a process designed to do just this, a process we call “customer-centered innovation” because of its deep and continuing reliance on the customer for direction. It systematically navigates a shifting landscape defined by four contexts: the strategy and capabilities of the business, the needs and values of the target customers, the potential of emerging technologies, and raw economics (see Fig. 2, The Innovation Clover).

The story of a successful new product or service is the story of a continual search for the “sweet spot” on the innovation clover.

Our approach is based on tightening the constraints of innovation the way lug nuts are tightened on the wheel of a car: in sequence and iteratively. The approach has increased by a factor of three the number of new products actually emerging from the research labs and moving into product development.

Customer-centered Innovation: managing the context

The process of creating new concepts is messy, noisy and non-linear, but it need not be haphazard. It is possible to define a set of repeatable steps toward the goal (with the caveat that, at times, the innovators must take two steps back to take three steps forward). The approach outlined below represents a dynamic look at the innovation clover, and is built on five imperatives, each of which layers in a new set of concerns. Each factor serves to constrain the opportunity space a little further (see Fig. 3, Managing Context).

1. Start with a strategic question (Fig. 3a): The strategic question defines the boundaries in which to look for opportunity. Because the boundaries reflect the strategic intent of a business unit, they constrain the concepts that emerge to those that might gain traction in the firm.

2. Focus on understanding the customer needs (Fig. 3b): Customer needs, wants and values are the defining constraint of the innovation process. Once a target customer has been identified, seek to understand the world from his or her perspective. It takes discipline and structure to force oneself to understand before locking on to solutions.

3. Invent into the customer needs (Fig 3c): Clearly defined needs provide the perfect foil for inventors. Brainstorm for new concepts that could radically change the way customer needs are being met. Doing this well requires a foundation of technical strengths in well-targeted areas.

4. Create new value propositions (Fig 3d): A value proposition will solve a whole problem for the users, and do so in a way that creates enough value to justify its use. To develop candidate value propositions, focus on the most compelling customer needs and on the most novel ways you have invented for satisfying them. A successful value proposition is likely to aggregate a variety of needs and concepts in order to create a coherent solution.

5. Test and refine the technology in use: Conduct trial of the value proposition with real people in realistic settings. Make sure that it not only works, but works in the target context of use and delivers the promised value. Iterate to identify the best solution possible for customers and the business. Put particular emphasis on understanding the requirements of the technology necessary to deliver the solution (to take invention off of the product development path).

Each of the steps through the innovation process constrains the problem space further. Each step also results in a better understanding of the prior constraints and the interactions among them. This new understanding inevitably leads to iteration and continued learning on the path to convergence. The remainder of this paper will explore each step in some detail, with examples to clarify the interaction among them.
1. Start with a strategic question

Start with a strategic question, get a strategic answer

The context-driven process begins with a strategic question. There are a few reasons for this. First, an innovative product or service is more likely to be successfully brought to market if it addresses an opportunity that the business really cares about. Second, a well-framed strategic question will guide concepts toward those within the capabilities of the firm: many ideas falter because the organization does not have the wherewithal to bring them to market. Finally, the focus on a strategic question can help to orient the innovators toward larger opportunities and defend against settling on the first good concept that comes along.

The strategic question identifies a market and trends or events in the worlds of business, technology or society that make the area of possible strategic interest. For example, saturation of the traditional market for postal meters combined with an increased interest at posts in reducing costs associated with stamps led us to ask, “How can Pitney Bowes develop solutions to meet the needs of those currently paying for their postage with stamps?”

Another strategic question was raised by the events of 9/11 and the subsequent anthrax scare. We asked, “What can Pitney Bowes do to help protect corporate mailrooms from, in the mail?”

At the start of an engagement, a cross-functional team is formed, with backgrounds in marketing, engineering, anthropology and business strategy. The team begins by clarifying the opportunity space, which is examined from multiple angles in an effort to narrow the focus of the investigation while maintaining its strategic intent. Is the customer segment too broad or too narrow? Is the business unit’s strategic intent clear? What changes in the world make this question timely now? A careful framing of the strategic question at the outset saves the effort of running down blind alleys.

2. Focus on understanding the customer

The power of outside-in insight

Grounded in the context of a strategic question, the innovation team begins by exploring what people in the target customer’s world are doing. They do this in the most logical of ways: by traveling to customer locations to observe people doing their jobs. This is a systematic endeavor, using tools borrowed from anthropology for the collection and analysis of qualitative information. The goal is to understand the customers’ world from the perspective of those living it.

One framework we use for the collection of data is called POSTA (People, Objects, Settings, Time and Activities). The team will, for example, follow key participants in the work setting around, observing what they do and how they interact with other people and tools in their environment. Or they may focus on key objects or artifacts in the environment, with special attention to the various roles that they play (functional, psychological and social). During another observation, the team may take notes and photographs of the work setting and try to understand how the configuration of space mediates the work. Finally, they chart activities, including both formal workflow and informal work practices.

For example, in the “stamps engagement”, the team visited dozens of small businesses of all types, watching the principals and others work, observing their practices and attitudes around the preparation of mail, and talking to them about their frustrations and desires. In the “secure mail engagement”, the team visited larger enterprises, especially those with an intense interest in security of the mail (lead users). They watched how people in those settings handled the mail, learned about new processes the customers were experimenting with, asked who was to become involved in the event of an incident - and even had the opportunity to observe the reaction to a hoax. This world was far more varied than that of the stamps engagement, but systematic data collection was necessary in both.

As the observations accumulate, the team analyzes the results. Again, there are systematic frameworks borrowed from the fields of anthropology and design. They include mapping the formal and informal work processes; coding the field notes for tacit (unspoken) data; mapping social connections among participants; analyzing the language that people use; and looking for recurring patterns in the activities. The goal is to identify compelling needs or values relevant to the strategic question.
In the stamps engagement, we found that small business owners hated to run out of stamps; hated to go to the post office to get more; didn’t understand (or care about) special services from that post office; and valued things that made their mail distinctive. We also found that they often did not have computers, and if they had them, did not want to tie them up with sending mail. As important as these problems were, however, they were unwilling to pay very much to overcome them.

In the secure mail engagement, the most important needs were to protect the health of employees, to protect facilities from damage, and to maintain business continuity. There was also a concern about the next threat, and therefore a need to stay abreast of the latest developments in the field. Because securing the mail was a cost of doing business, with no immediate potential to increase revenues or reduce costs, we also found strong ambivalence about investing in secure mail solutions.

Once identified and pointed out, many needs can appear obvious: the difficulty is in seeing and stating them. In practice, we find that what is most important to people is often below the surface and hard to articulate. In many cases, real problems have been accommodated by people in the work environment and have receded into the background. They crystallize only later, during the analysis of field notes. The skills of systematic, open observation and careful analysis are essential to doing this phase of the work.

Developing a deep understanding of needs is crucial - and iterative. It is inextricably intertwined with the process of invention, as will be discussed below. A good set of needs serves both as constraint and as the agent for releasing remarkable creative energy.

### 3. Invent into the customer needs

**Prototypes as the language of innovation**

Invention is a multi-tiered process. The first round of invention is tightly tied to seeking a deeper understanding of user needs. It is based on the premise that needs, especially tacit needs, are hard to express in words and easy to misunderstand. At the same time, everyone has an immediate response to a “thing”. We try to isolate the needs and embody them in novel and interesting prototypes — not to test the potential of the concept but to assess the accuracy of our understanding of the underlying need. Each hypothesized need creates a cycle: express the need; brainstorm solutions to it; embody the solutions in very rapid prototypes; and check our understanding of the need by getting reactions to the prototypes from users in their work settings (see Fig. 4).

Structured brainstorming is a part of many innovation processes. What distinguishes the approach at Pitney Bowes is the focus and frequency of the brainstorming efforts. We focus a brainstorming session around a specific need or set of needs, crystallized from the field work we have done up to that point. The usual process is to bring together a diverse group of participants, including people with relevant expertise who are not engaged directly in the project, and drive 100 ideas in an hour. The brainstorming sessions are facilitated, and the facilitator attempts to both keep the session moving and to keep the focus on the targeted set of needs. A typical project may conduct two or three brainstorming sessions a week at the early stages of a project.

From the brainstorms, the team will select ideas to prototype that seem both compelling and a good solution to the need under consideration. In the first round, prototypes are low-fidelity representations: a foam-core model, something made of cardboard, a storyboard. Their purpose is to probe the need, to refine it, disconfirm it, or discover the underlying need that we misrepresented. We have found that people will react very directly and honestly to such prototypes, and tell us where we have gone wrong. In one instance, we mistook a need for privacy as a need for security. In another, we sought to help people find individual documents when what they really thought of themselves as losing were folders containing documents.

Early prototypes in the stamps engagement helped us to understand that people wanted to retain some of the features of stamps that enabled them to personalize an envelope. We also understood that, without a scale and a way of determining how much postage was required, the device would be of much less value.

Early prototypes in the secure mail engagement emphasized the need to communicate to recipients of mail that a mail piece had been tested and the need for a device that could be used with very little training and under stressful conditions.
Gathering disconfirming information does require an “ego-less” sharing of the prototypes. This is a skill. The innovation team has to be trained to share the concepts and observe reactions, not to promote them, and to listen for things that they do not expect to hear. What is learned in these sessions is fodder for the next round of prototypes, which continue until we believe that we have really understood (or disconfirmed) a compelling need of the target customers.

There are a lot of “inventive gaps” suggested by the prototypes — technical capabilities that would be required to really deliver what the customer wants, but which require further work (and may not even be possible). We do not focus on these at this stage in the process, but come back to them once we have decided on the whole solution that we would like to offer to the customer.

4. Create new value propositions

Synthesis

At this stage in the innovation process, we have identified, validated, iterated and prioritized a set of customer needs, wants and values. We have a few prototypes that have really resonated with users. We do not, however, have a value proposition. A value proposition provides a complete solution to a coherent set of unmet or poorly met customer needs. It significantly changes the user experience, and delivers a set of promised benefits that matter.

Creating the value proposition from the mosaic of needs and user reactions is a creative phase of the work. It requires arranging and re-arranging the pieces, seeking a collection that makes sense. It usually starts with a focus on the most compelling unmet need, but goes beyond that need to the set of requirements necessary to deliver a complete user experience. It requires an explicit analysis of the trade-offs between cost and benefit, selecting among the needs to be satisfied so that the solution is both coherent to the user community and worth the cost of delivery.

In the case of the stamps engagement, the value proposition was articulated as “a distinctive, easy to use replacement for stamps with a price point well below alternatives”. It had to have elements of fun as well as convenience, and still be profitable for Pitney Bowes. This created a series of challenges, both technical and economic, and raised questions about the ability of our existing channels to achieve the desired volume levels. But each of these challenges was focused, and therefore amenable to analysis, testing and solution.

In the secure mail engagement, the value proposition was summarized as “the ability to protect people and facilities from anthrax in the mail through isolation and detection of the threat.” The system had to have the ability to be used by mailroom personnel and could not create significant delays in the processing of the mail. A significant challenge of the business was the fluctuating demand and willingness to pay as a function of external events. Each of these challenges, again, created focused areas for technology and business development.

At this stage of development, the design context has tightened its focus to one proposed opportunity. The context has also broadened to include thinking about all four aspects of the opportunity: user value, technological feasibility, business risks and profitability. The design space has been kept manageable by balancing a narrowing of focus with the broadening of concerns.

At this stage, there are questions that must be answered to fill in gaps in the experience and to demonstrate feasibility. Some of these are technical and involve targeted research into solutions. Some of them relate to the market size and a customer’s willingness to pay, and these require focused market research. Others relate to costs to deliver the solution and reach customers; they might require new ways of managing the product development or the channel. Finding new ways of addressing these concerns — what might be called business model innovation — is usually as important as product innovation in bringing a compelling solution to market.

5. Test and refine the technology in use

Will it play in Peoria?

Once a value proposition is well-defined and shows promise as a viable, marketable offering, we seek to identify the key risks inherent in the solution. Then we do the work necessary to retire those risks. We do this through a sequence of trials with real users in the context of their work. These can be as simple as evaluations of usability in situ or as elaborate as “living labs”, in which users participate in the ongoing development of the solution. As questions are answered, the opportunity is either validated or called into question. Surprises are inevitable, and can lead to a cycle of risks to be retired.

In the stamps engagement, risks of the technology-in-use were primarily usability issues, but they fed back in significant ways into the cost structure of the product. The team experimented with several versions designed to drive costs out without sacrificing usability or “fun”. Because the product was expected to be sold through a new channel, we also conducted trials within this channel, with mock-ups of the final product.
For the secure mail engagement, we deployed an early version of the device in our own mailroom, discovered issues with its use and its design, and addressed these prior to a week-long trial at a customer site. The lessons from these trials enabled us to make changes in the design at a point well before extensive engineering efforts.

It is hard to overstate the power of the insights gained during these trials. Even though they are conducted at a stage when the team believes that they understand the concept very well, there are dozens of issues that relate to the context of use that can only arise during a trial. Often in “brilliant idea” processes, such issues are identified only during an “alpha test”, after the product has been largely developed. The flexibility to address them at that stage is greatly limited.

This customer-centered testing and refinement precedes product development at Pitney Bowes. This helps to make the transition from R&D to product development a smooth one. In the course of a typical engagement, a cross-functional team has been developed, the concept has been validated with real customers; a prototype has been tested in the context of use; and key technical and business issues have been addressed. As a result, the business case for progressing carries less risk than for many R&D projects; and efforts are already underway to retire remaining risks. Under these circumstances, the likely success of a concept emerging from the labs is greatly increased.

Conclusion

Success with new product development requires that the “myth of the brilliant idea” be replaced with a model for innovation based on a careful understanding and systematic tightening of constraints. We call this “Customer-Centered Innovation”.

In contrast to the “myth of the brilliant idea”, customer-centered innovation manages the contexts in which innovation takes place. The concepts are not pre-existing ideas, but emerge from the contexts. The critical task of innovation is evolution, not selection. The process is to generate them, and “morph” compelling concepts to meet a variety of concerns, not to weed out weak concepts and hope that a few compelling ideas survive.

The most useful crucible for managing the creating of compelling concepts is the customer site, to which we return again and again. We have found that such a discipline greatly increases the success rate for new product innovations.