Understanding Innovation

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It seems like everyone in the digital industry claims to be able to change the world with his or her ideas. Although we have certainly witnessed incredible technological and social changes in the last few decades, there is surely a disproportionate amount of self-proclaimed innovators to true innovations.

As a result, the terms "innovative" and "innovation" have been reduced to industry buzz words that get thrown around casually all too often. What does it really mean to be innovative?

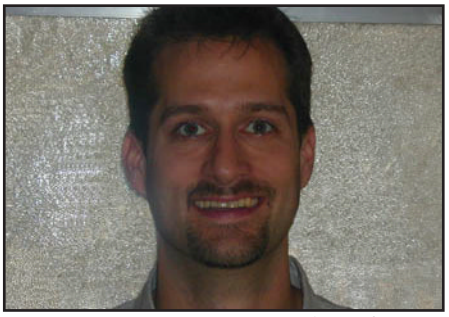
This paper briefly explores the meaning of innovation, how innovations get adopted and why user-centered design is crucial for innovation to succeed.

Diffusion of Innovation

In any discipline there is a gap between what is known (theory) and that what is applied (practice). Not all great ideas get realized, in spite of their obvious advantages.

The US patent office, for instance, receives hundreds of thousands of requests for patents on new inventions each year. Only a fraction of these become successful innovations. Of course, financial support is a key factor here, but other social factors also play a large role.

Everett Rogers developed the oft-cited "diffusion of innovation theory." He defines an innovation as an idea or practice that is perceived as new by an individual or adopting party. Rogers says "perceived" because it need not be newly invented, rather newly adopted. Nylon, for example, was invented in 1928, but first used in 1939.



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An innovation is therefore not the idea or invention itself, rather the adoption thereof. This distinction is important: social change only occurs after a new idea is created, implemented and finally accepted. By definition, innovations have a consequential impact on a given social group.

Five Faces

Rogers identifies five prime characteristics that affect the rate of adoption of a new idea. In the general interest of speeding up the rate of adoption, none of these points should be underestimated.

1. Relative Advantage - is it better?
The degree to which an innovation is perceived as superior to an existing idea. Advantages can be economic, social or psychological. Relative advantage alone is not enough to assure successful adoption, although many assume that it is.

2. Compatibility - is it appropriate?
How well does the innovation fit in with the existing values, past experiences and current needs of potential adopters. ('compatibility' here does not refer to technical compatibility).

3. Complexity - is it understandable?
How difficult do the adopters perceive the innovation to be. If a technology is seen as being too complex, people will be less likely to try it.

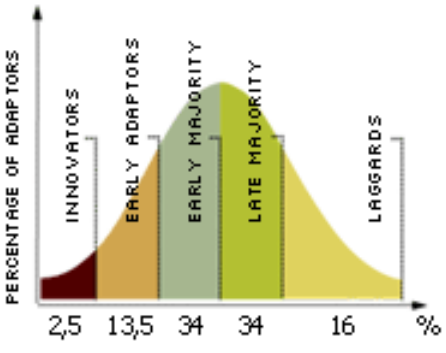
4. Trialability - can it be tested?
The degree to which an innovation can be tested on a limited basis without final commitment. Trialability also refers to whether or not people have access to the new idea at all.

5. Observability - what does it look like?
The degree to which others can view or witness the innovation. Generally a higher visibility of the features and results of an innovation, the better the adoption rate.

Consider the non-adoption of the metric system by the American public, for instance. In spite of government-sponsored efforts to convert to the metric system, the U.S. has, with a few exceptions, rejected this innovation. The relative advantages of the metric system are taught in grade school and are widely known. It is also less complex than the systems of measurement currently in place. However, there are problems of compatibility, trialability and observability. The result: non-adoption.

There are five types of adopters that affect the rate of adoption of an innovation. Each group has a different perception of new ideas.

1. Innovators - those who conceive, develop and introduce an innovation to a broader public.
2. Early adopters - generally embrace cutting edge innovations and are not frightened by newness and uncertainty.
3. Early majority - proceed cautiously and weigh pros and cons of an innovation carefully.



Adoptors' categories based on innovativeness

4. Late majority - adopt only after time-tested proof of an innovation's relative value.
5. Laggards - highly skeptic and generally unwilling to change at all. They adopt very late.

The early and late majorities together comprise nearly 70% of all adopters. Real widespread social change, then, only occurs after these groups adopt a given innovation.

Invent / Re-Invent

"As the births of living creatures at first are ill-shapen, so are all innovations, which are the births of time", wrote Francis Bacon. Innovations are indeed often ill-shapen initially because new ideas necessarily bring a degree of uncertainty with them. For innovators and early adopters this uncertainty generally does not present problems. Within these groups newness is often relished.

However, for the last three groups - early majority, later majority and laggards - newness is perceived with caution. Sometimes this results in years before an adopter becomes aware of an innovation, forms an opinion, and decides to make use of it.

Furthermore, the adopting group often views user participation in the innovation process positively. No one likes to have change thrust upon him or her. The user's ability to shape an innovation, or to reinvent it towards their own needs, can be seen as the sixth factor effecting the adoption in addition to the five mentioned above.

Innovations themselves are necessarily invariant, particularly just after introduction. Corrections and adjustments made to an innovation during its development are imperative for its ultimate adoption.

To reinvent two conditions must be fulfilled:

1. Proper feedback channels between the user and the innovator have to be in place. Innovation is two-way communication. Dissemination of information across these channels in terms that users can understand will reduce uncertainty.
2. Innovators must be willing and able to make adjustments to address the uncertainties of the end users. Because digital media are highly flexible and have the capability of one-to-one services, they should always allow for user interaction. Including a certain level of user input can help ensure acceptance of an innovation.

Innovate Understanding

Innovators often fail to consider their target audience. The tendency to focus on their own invention is so strong, they forget about the end user.

A social group generally does not evaluate an innovation based on its scientific merits, rather on its usefulness and subjective appeal. Newness for the sake of being new is not enough. Consideration of the motivations, needs and behaviors of an adopting group, as well as their social contexts of use, is a prerequisite for the final success of an innovation.

Employing principles of user-centered design generally reduces the chance of failure while increasing the rate of adoption. Although there are many unforeseeable factors that may influence final adoption of an innovation, placing user needs at the center of attention can greatly reduce the chance of failure.

This does not mean that new ideas should shy away from pushing the boundaries of human creativity and social understanding. Cutting-edge ideas are often the best innovations. Nonetheless, sensitivity for how cutting-edge products and services are introduced and what impact they will have on existing social systems is required. Additionally, employing user-centered principles does not mean that innovators must assume a passive role, reacting only to user needs. On the contrary: Innovators must pro-actively seek the best solution for a given situation. Very often the best ideas come from the users themselves. This demands a deep understanding of the target group throughout the development of an innovation.

Innovation, then, is a balance between new ideas and user acceptance. Ideally the innovation process should be iterative and incorporate user input from the very beginning. Real success comes from a careful combination of progressive innovations and a deep understanding of users.

Understand Human Behavior

We live in a culture that values technology more than unpredictable human activity. All too often a technological invention is confused with an innovation. In the end the success or failure of a new idea lies not on a cutting-edge solution itself, but rather on a deep understanding of human behavior and the social contexts in which it occurs.

for more information

Diffusion of innovation (4th edition)
Everett M. Rogers (1995)

Good definitions on innovation
http://hsb.baylor.edu/ramsower/ais.ac.96/papers/PRESCOTT.htm

The value of user-centered product design
http://msdn.microsoft.com/library/welcome/dsmsdn/hfactor9_5.htm

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