Market-Driven Innovation

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A new method for starting the iterative innovation process from the market side based on a sociological trend has been developed. It eliminates the traditional difference between the innovators and the sociological group that carries this trend, which can only be achieved by combining real-world innovation with innovation education. The method for market need discovery is presented as a step-by-step process with detailed reasoning, followed by a real-world example that details the outcomes at every step along the way. The example concludes with a detailed description of the outcome after the first innovation iteration cycle. The richness of the resulting concept demonstrates that an innovation process can be successfully started from the market side via the proposed method.

Technology-based innovation is a process that generates new business opportunities. The successful performance of the innovation process connects technology with market needs in such a fashion that a profitable business can be implemented. Any or all of the three areas of technology, market, and implementation can be uncertain at the beginning of the innovation process. We most commonly think of innovation as the creation of new technologies to meet existing or emerging market needs. But it is equally possible to discover unmet market needs that can be successfully addressed with existing or emerging technologies. Even if both technologies and market need were known, it is still possible to innovate by finding a better way to implement the business opportunity, be it with an improved business model, a better embodiment of the technology, or a more efficient way to produce the technology and/or deliver it to market. Although any particular business opportunity representing the innovation outcome may ultimately be based on more or less originality in each of the three areas of technology, market, and implementation, uncertainty typically exists in all three areas at the beginning of the innovation process. The true nature of the innovation process is therefore iterative, sequentially reducing the uncertainty in the three areas of technology, market, and implementation until the outcome of the innovation process converges on a profitable business opportunity. The innovation process is schematically depicted in Figure 1, where the size of the circle around each

area represents its uncertainty, and therefore its risk. Efficient convergence can only be achieved by concentrating on reducing risk in the area that poses the highest perceived risk at any given point in time. Once the risk in this area is reduced below the perceived risk of another area, the discovery effort is switched to the next area. This process is iteratively repeated until convergence on a profitable business opportunity is achieved.

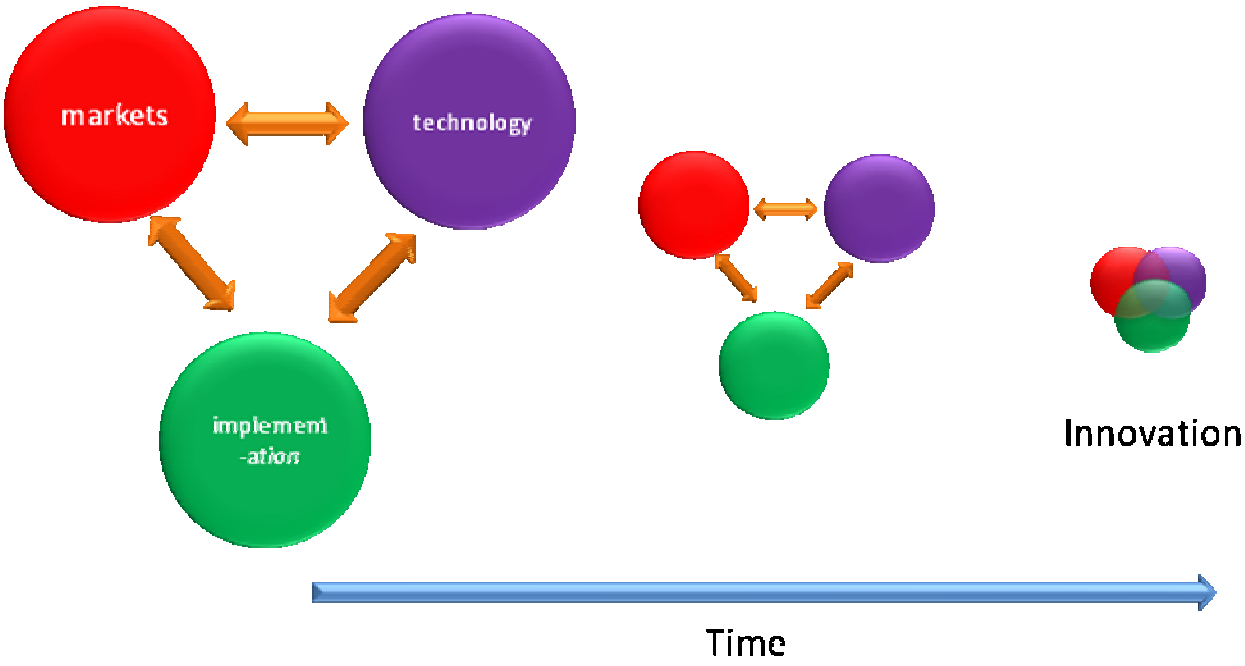

Figure 1. The innovation process is the repeated iteration between market, technology, and implementation.

At the beginning of the innovation process is typically a mere perceived possibility originating from one of the three areas. Such perceived possibilities often arise from a scientific discovery or a basic technical invention on the technology side, the recognition of changes in consumer or business behavior on the market side, or the realization that existing methods of business operations or supply chain structures are ready for disruption on the implementation side. When asked to think about past innovations, most of us tend to consider examples that were dominated by some breakthrough technical invention in the beginning that made it all happen. Although a basic invention may start an innovation process, many innovations have been started quite differently. Take Dell Computers, for example, whose innovation process was started from the implementation side by recognizing the possibility for a disruptive business model in the PC market. It is also possible to start the innovation process from the market side, and this paper demonstrates a new method for arriving at such a starting point.

The iPod is an example of an innovation process that was started from the market side by observing that portable CD players had become something of an anachronism in the ongoing evolution of portable electronic devices. Digital cameras and phones, for example, were on a

rapid path of miniaturization with ever increasing functionality, while portable CD players defied this trend mainly due to the rigidity of the media carrier, the CD itself. This observation allowed direct entry into the innovation process from the market side because it encompassed a relatively well-defined market need—there was little question that a much smaller portable music player with an integrated and flexible media carrier would be demanded by consumers. Because of the already advanced miniaturization of other portable electronic devices, the technological uncertainty was also significantly reduced from the start. In fact, the development of the iPod did not generate any significant new technology. The heavy lifting during the iPod innovation process was done on the implementation side that ultimately produced the key factors of the downloadable iTunes business model and the well-designed user interface as a result of successive iterations through market, technology, and implementation.

This raises the fundamental question of how one can effectively enter into an innovation process from the market side without spotting directly, like in the case of the iPod, a disequilibrium that makes the market need relatively clear. How can one effectively enter into an innovation process based on a broadly observed sociological trend that is neither related to a specific context nor a specific application?

This paper describes an original method for identifying initial market needs based on broadly observed sociological trends and how they can be channeled into the innovation process. The method was developed during a one-year innovation experiment and study in the consumer electronics space. Although the method was actually developed during the experiment itself, it will be described in general terms first, and then it will be illustrated at the stepwise outcomes during the actual experiment, including the first iteration cycle of the innovation process.

Generalized Method

Successfully deriving market needs from a broader sociological trend obviously requires the direct involvement of individuals that represent the very sociological group who carries this trend. Throughout this paper, we shall call these representatives of the trend-setting sociological group the *team*. Although it is not necessary for the team to be statistically representative of the sociological group, the team should be sufficiently diverse in behavior and personalities to capture the dynamics underlying the trend. Contrary to traditional focus group research, which tends to work for testing and fine-tuning an already identified market need, our method starts from the premise that a much deeper and longer involvement of the team is required for deriving market needs from the ambiguity of an amorphous sociological trend. The most powerful involvement results from eliminating the traditional separation between the innovators, who try to discover the market needs and subsequently start the innovation process based on those needs, and the team members, who carry within themselves the seeds of yet unrevealed market needs by virtue of representing the trend-setting group. When the team in fact becomes the innovation team, under the mentorship of experienced innovators, two goals can be achieved simultaneously. As the skills of innovation can only be learned hands-on through actually

participating in real-world innovation, the team members, who possess the potential of becoming innovators, can be trained in the best possible fashion. The skills of thinking like an innovator, on the other side, allow the team to discover original market needs among the sociological trend they represent. In fact, it is not possible to achieve either of these two goals by themselves, unless the team already consists of experienced innovators, which is extremely improbable due to the scarcity of trained young innovators. The necessary coexistence of innovation education and market need discovery already suggests that much of this process is best done through the Socratic Method, which produces self-insight through questioning by the experienced innovators mentoring the team. Although it is for sure the dominant educational technique throughout, our method distinguishes a number of distinct phases for market need discovery before entering the iterative innovation process.

Team Selection

The market need discovery process starts with the careful selection of the innovation team by the experienced innovation mentors, satisfying several criteria simultaneously. First, each innovation team member needs to represent inherently some aspect of the underlying sociological trend through his or her current daily behavior. This representation goes beyond simply being part of the sociological target group, for example a specific age group, as team members need to commonly engage in activities enabled by the latest technologies or methods available that define the forefront of the sociological trend. They have to exhibit a general enterprising outlook on these types of activities with the flexibility to change and the motivation to advance their own behavior in this context. In the case of technology-based innovations, this is not the same as being early adopters of the latest technologies, because many factors such as individual cost-benefit considerations, applicability of an existing technology to the personal life style, or availability of means to purchase the latest technology contribute to a technology adoption decision. It rather reflects a fundamental desire and readiness to explore improvements of behavior through new technology. Secondly, each team member must have the potential to become an innovator, which needs to be assessed individually. Although there is no standard formula for this, traits like curiosity, creativity, comfort with ambiguity, persistence, tendency towards constructive self-criticism, and evidence of analytical and abstract thinking skills can be determined through behavioral interviews. Thirdly, it is important to compose the team from a variety of personalities and personal preferences that are complementary to each other with the goal of creating a team that embodies a “whole brain” with balanced analytical left and creative right sides. Such a team then results in a representation of the sociological trend in personalities and behaviors, with the capacity to innovate.

Context Expansion

Each and every one of us is deeply rooted in the contexts of our daily lives and the behaviors we have adopted for acting and responding to recurring situations. It is very hard to imagine possibilities for our own behavioral changes on this basis. In order for us to engage in future-oriented thinking and to discover the motivational basis of the forward-looking sociological trend, we thus need to first decouple ourselves from our current behavioral and contextual constraints. A good method for achieving such decoupling from today while retaining our very personal behavioral characteristics and motivations is to write individual science fiction stories that project our lives into the future. A science fiction story is not a fantasy story that entertains wild imaginations with no basis in reality, but it is rather a collection of plausible future scenarios that do not violate fundamental scientific or behavioral truths. The main purpose of science fiction story writing is not to discover future possible technologies that could become part of the innovation process, although that may occasionally happen, but to enter into an imaginative mode of thinking that expands our minds beyond the conditioning of our current behavior and the contexts in which we live. A secondary beneficial effect of writing individual science fiction stories and sharing them with the team is a revelation of each team member's personality and behavioral motivations, which fosters team building and mutual respect for individual differences at an early stage.

Motivational Profiling

With the minds of the team members expanded beyond their immediate life contexts, the next step is to discover a comprehensive set of Needs and Wants that drives the behavior of the team members, or is likely to do so in the future. Although some behavioral motivations are expressed in the science fiction stories, the goal is to arrive at a much more fundamental set of Needs and Wants that reflects in its entirety the complex motivational profile of the team, and thus the trend-setting sociological group it represents, in many conceivable contexts. This can be achieved in a three-stage motivational profiling process.

The first stage is a comprehensive brainstorming session involving all team members with the free articulation of Needs and Wants. All stated Needs and Wants are recorded indiscriminately in plain view for everybody, for example on a board, as they are articulated. This produces typically a very diverse set of statements that originate either from the extended contexts that have been explored in the science fiction stories, or from the contexts of the team members' current lives, or from associations and elaborations inspired by the articulations of other team members in the brainstorming session. Because of these three origins, this initial set of Needs and Wants statements tends to be very rich and comprehensive. It should be noted that the effect of science fiction story writing and sharing prior to this first-stage brainstorming session goes beyond the generation of Needs and Wants based on the extended contexts. It also renders the Needs and Wants statements based on current life contexts more profound, because the preceding analytical thought processes around behavior that the team members engaged in

during the writing of the individual science fiction stories still resonate. Moreover, the sharing of science fiction stories builds the basis for the team members to play off each others' ideas comfortably and creatively.

In the second stage, the innovation mentors group these initial Needs and Wants under common fundamental human motivators, such as, for example, the need for belonging or the fear of repercussions. Although abstraction to these general motivators of human behavior does not add any resolution to the initial Needs and Wants statements, they serve as an educational means for the team members to think in broader and more fundamental terms, as well as to elucidate commonalities and connections between the statements.

The third stage of the process generates a new set of fundamental Needs and Wants statements under strict rules. The initial Needs and Wants statements produced during the first stage are not revisited, although they do, of course, still linger in the back of the team members' minds. The team members are now grouped into sub-teams of three, and they are tasked with generating a fresh set of Needs and Wants statements under each grouping of general human motivators, while observing the following rules. Each Need or Want statement can only consist of a simple sentence that is questioned by the other sub-team members until it can stand by itself without further explanation. The team members of the sub-team take turns, one at a time, to generate such a Need or Want statement, until the specific grouping of general human motivators is exhausted. This method produces a rich and comprehensive set of Needs and Wants statements that are inspired by the original set obtained during the first-stage brainstorming session, but are more concise and fundamental due to the strict rules enforced during stage three.

Framework Generation

The motivational profiling process produces a comprehensive and profound set of Needs and Wants statements by the team that represents the underlying sociological trend. However, through the very process described thus far, this set of Needs and Wants statements is entirely free of specific context and is only linked to the underlying sociological trend by virtue of the team that produced it. If this process is done well, it will be impossible to group the Needs and Wants statements thematically in a specific fashion without it being equally justifiable to group them in any number of other ways, because most of these statements will be profound enough to be placed into many different contexts. It just depends on the lens through which one chooses to examine them. Thus, we have effectively arrived at a multidimensional matrix of Needs and Wants, where each is connected to many others depending on the context one chooses. It is now the task of the experienced innovator to fully absorb the set of Needs and Wants statements and to discover prominent patterns that can be associated with the underlying sociological trend. If and when such patterns are recognized, they can be formulated into frameworks that relate whole subsets of Needs and Wants to sociological developments. The formulation of these frameworks can become the identification of broad market needs, although they are generally too broad for immediate introduction into the innovation process.

Market Need Discovery

In order to generate more context-specific market needs that can serve as a staring point for the iterative innovation process, we now employ all the understanding and outcomes of the previous phases simultaneously. The frameworks generated in the last phase reflect broad market needs that need to be applied to more specific contexts. They thus can act as a guiding principle for the subsets of more concrete Needs and Wants statements upon which they are based through virtue of connecting them to sociological developments. The specific contexts for which the market needs are to be developed are drawn from either the current or expanded life contexts of the team members. The progression of the previous phases and their synthesis into specific market need discovery is schematically shown in Figure 2.

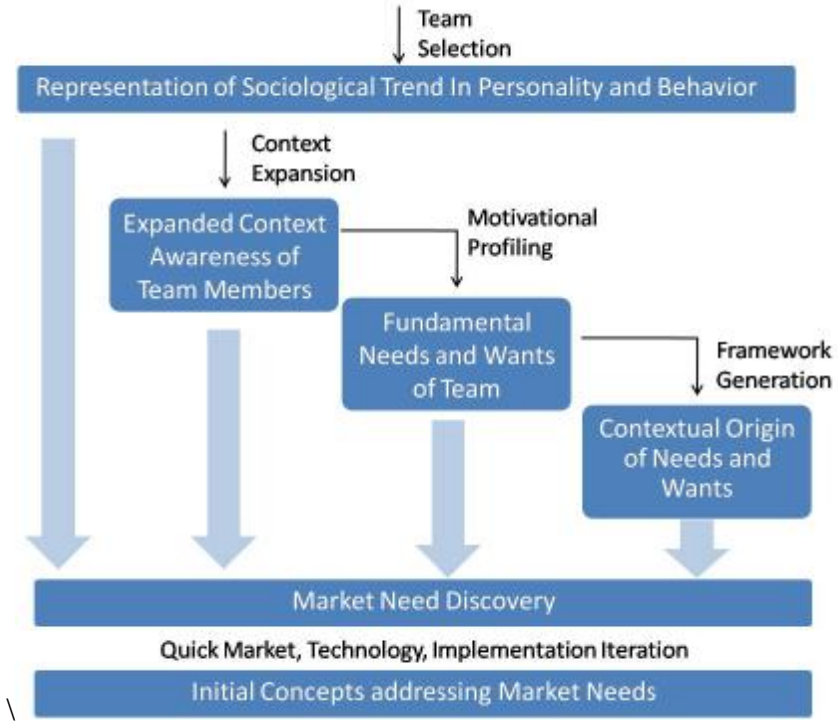

Figure 2. Schematic of market needs discovery process.

To validate specific market needs generated through this process, they are vetted by a quick iteration through technology and implementation, not yet for assessing the feasibility of each, but rather to make sure that both technology and implementation are both at least conceivable. The result in each case is a preliminary concept driven by the bottom-up process of market need discovery that could be realized through a technology that is conceivable in the not-too-distant future and that has an associated business model that can be reasonably imagined in today's markets. Any specific market need that does not have both conceivable technology and implementation is not considered further, but the context is modified until these necessary criteria are met.

This concept generation takes place in several subsequent creative sessions between the team members, potentially in sub-teams, and the innovation mentors via the Socratic Method. The starting point is typically a selection of Needs and Wants statements, elucidated through the frameworks if applicable. The innovation mentor then engages the team members by asking them to place these Needs and Wants into specific contexts, constantly asking them to specify in increasing detail how these Needs and Wants would play out in the contexts and how they could be possibly addressed.

Experimental Outcome

The experiment on market needs discovery in the consumer electronics space was carried out in the context of an innovation project under the Business of Science and Technology Initiative (BSTI) at Cornell University in collaboration with Eastman Kodak Company over the academic year 2007-2008. BSTI was established in 2006 between the College of Engineering and the Business School at Cornell University to create a new platform and business growth model for connecting the worldwide corporate community with major research universities. All BSTI efforts are tailored to real-world innovation with corporate involvement in today's open innovation environment. The BSTI accomplishes both innovation and educational goals by forming innovation teams composed of multidisciplinary student teams and BSTI innovation managers with experience in both technical and business innovation.

The market needs discovery was based on the sociological trend of rapidly changing communication and networking behavior among today's 19-21 year olds. The adoption and spread of new technologies, like instant messaging or Facebook, was much more rapid among this age group than among slightly older peers. This dynamic suggests that unmet needs in the consumer electronics space are likely to exist for this age group, and the goal was to discover these needs with a team representing this age group.

Team Selection

Each of the nine team members had been selected over the summer of 2007 from a large pool of starting Cornell sophomores via a three-month selection process that looked for a strong fundamental desire to learn and to create, a creative mind set, a high level of maturity, a high social capability and connectivity, and a solid engineering thinking approach when applicable. This selection process involved the students writing about themselves as well as sitting for hour-long personal interviews conducted by BSTI innovation managers along with corporate participation. The behavioral interviews focused on social behavior and ways the students spend their free time to determine the level of active engagement on the forefront of the networking and communications trend. The interviews also evoked stories and experiences from the applicants' lives, and thus probed traits like curiosity, creativity, comfort with ambiguity, persistence, tendency towards constructive self-criticism, and evidence of analytical and abstract thinking skills. The team of the nine selected sophomores consisted of three females and six males, seven

engineers and two with business-related studies. Although just starting in their respective disciplines, the intended engineering fields of study covered Operations Research, Computer Science, Electrical Engineering, and Mechanical Engineering. In spite of the original plans for a team of five, nine members were selected because they represented the diversity of personalities to complement each other for forming a "whole brain" team. This team was augmented with two MBA students who were present to learn and assist with the management of the innovation process.

Context Expansion

Each team member was asked to write an individual science fiction story that takes place 10-15 years in the future when their lives would be stable, i.e., after completing their education and having settled. The writing assignment asked the team members to think about their future lives as if writing a theater play. First, the stage is set by defining what the stage environment is like, who is on stage and what their relationships are, and what objects the players are handling. After setting the stage, action results from motivation, opportunity, and means. Motivation could be desire or dread, opportunities appear as times change and openings are created, and means are created as tools change or become newly available. In order to keep the stories concise and comparable, but still comprehensive, the team members were asked to focus on one typical day in their future lives from start to finish, including work, family, and friends. All science fiction stories turned out to be personal, profound, and free of fantasies. They served the goal of context expansion by decoupling the team members' thinking from the present and allowed the team to build mutual respect for each others' personalities in a risk-free fashion.

Motivational Profiling

The three-stage motivational profiling process produced 176 profound single-sentence Needs and Wants statements, too many to report in the context of this paper. We will thus report only a small sample generated under one group of general human motivators as determined in stage two of the process. The overall human motivator was identified as the **fear of misrepresentation**, based upon the following keywords that came up during the brainstorming session of stage one: *managing identity, knowledge about someone, community, familiarity, perception vs reality, feeling safe, control, incentive vs. barrier, trust.*

Stage three under these general human motivators produced twenty Needs and Wants statements, the first eight of which are cited below:

- I need to feel in control of my image.
- I want to know what others think about me.
- I want to be able to act my age and not worry about how it will affect my search for internships and jobs.

- I fear being judged or punished for one aspect of my identity.
- I want to minimize inaccurate data/reports that are easily accessible.
- I want to be able to be in different social circles and not have one circle judge me because of another circle.
- I want to know what people expect from me.
- I don't want my identities mixed/mashed between my different social groups.

Each of the statements is psychologically profound in that it expresses a genuine motivation, desire, or fear. However, the statements are free of any specific context, yet very characteristic of the age group that generated them. The set of all 176 Needs and Wants statements, generated under various general human motivators, constitutes thus a motivational profile of this generation.

Framework Generation

The fact that the Needs and Wants statements are context-free allows them to be interpreted in more than one way. With the keywords and general human motivators that were used for their generation removed, one can now place all 176 Needs and Wants statements in a row and start reading them in sequence. This will evoke some context and cross-relations by association in the mind of the reader. If one now changes the order or starts reading in a different place, different contexts and cross-relations will emerge. As there are too many possible associations to analyze, we looked for prominent patterns that could serve as a framework for identifying generalized market needs. Recognizing these patterns, although somewhat obvious after they are stated, requires going over possible associations in one’s mind so many times that one will know all the Needs and Wants statements well by heart after a short while. As this associative process cannot be replicated in writing and since the framework descriptions can be extensive, we will only focus on one of the frameworks generated by this pattern recognition process.

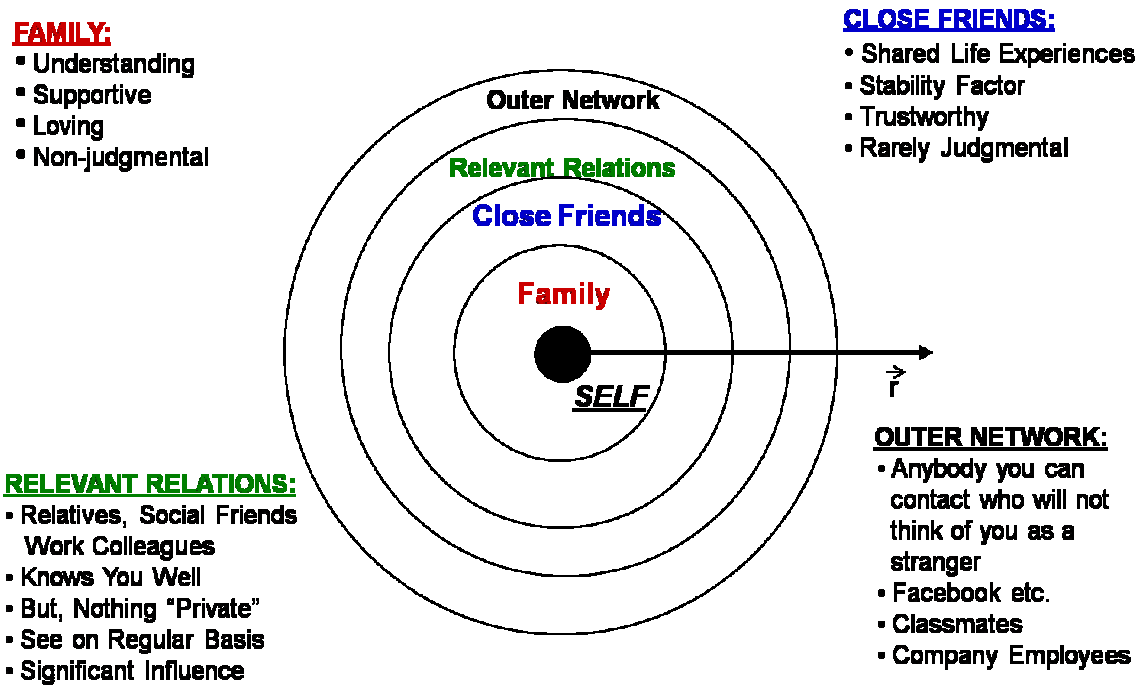

Figure 3. "Circles of Life" framework.

The "circles of life" framework, depicted in Figure 3, focuses on social relationships and their dynamic evolution. The framework consists of four concentric circles with the closer relations in the center and more distant relations on the outside. At the center is the family, which is (ideally) understanding, supportive, loving, and nonjudgmental. The next circle consists of close friends, who typically share one's life experiences, who are a stability factor, trustworthy, and rarely judgmental. In the third circle are relevant relations, such as relatives, social friends, and work colleagues. These relevant relations tend to know you well, but you typically don't share anything private. You see each other regularly and exert a significant influence on each other's lives with respect to social standing and career. The outermost circle is called the outer network and consists of anybody who would not think of you as a stranger. This would be classmates, company employees, Facebook friends, etc., with whom you don't have a significant relation of mutual influence. As simple as this particular framework may be, it works well with certain Needs and Wants statements when they are applied sequentially to the different circles, questioning their relevance for a particular circle, and how the relevance transitions into the next circle. This establishes the social target group for a particular set of Needs and Wants. For example, statements like

- I want to manage and understand the different exchanges of expectations between different groups of people that I want to make different impressions on.
- I want to know what others think about me.

- I want to understand the existing social relationships of people with whom I communicate.
- I need to feel in control of my image.

are best applied to the relevant relations circle, as in this circle the control of one's image is most significant in its consequence for either career or social standing. With this understanding, a concept based on the need for better image control could be developed, which comprises a technologically advanced exchange of digital media bearing one's image within the relevant sociological groups.

Market Need Discovery

Under the guidance of such frameworks and with the application of the current and extended contexts of the team members, we succeeded in placing groups of the fundamental Needs and Wants statements into specific contexts of high potential value. By the process illustrated in Figure 2 earlier, we thus discovered market needs that were specific enough to be further developed into initial concepts by a quick iteration between the market need, technology, and implementation. Among the eight context-specific market needs generated, the following three were chosen for further development into initial concepts.

Managing Social Processes for Outer Circles

- I need to gain as much relevant information as possible about my outer network for reducing the social "cost" of interacting with my outer network and for efficiently recruiting new friends to my inner circles.
- I need to gain as much relevant information as possible about my relevant relations in order to impress them.

Image Control

- I need to be able to control my image and images, and when crossing the intended boundaries, they irrecoverably self-destruct.

Change/Boost my Mood quickly according to my Personal Preferences

- I need someone to help me to change my mood quickly when I ask him to.

The initial concept development based on these three context-specific market needs produced five concepts complete with a conceivable high-level business model and/or a conceivable technology embodiment, as applicable. Three of these initial concepts were then chosen to enter into the first innovation cycle. The personalized mood bank concept was represented in its high-level data flow format along with instances of use; the image control concept was represented by a high-level digital rights management format along with a server-based image-sharing business

model, and the social process management concept was represented by a combination of an advanced organizer-planner device and a social network management device.

First Innovation Iteration Cycle

At the beginning of the first innovation iteration cycle, the three different concepts were examined separately according to what was perceived as the next highest risk. The feasibility of the image control concept was vetted technologically, while the feasibility of the organizer-planner with social networking and the feasibility of the personalized mood bank concepts were examined from the implementation side. By considering user scenarios on the implementation side in increasing detail, the organizer-planner with social networking emerged as the pivotal concept due to the central role of metadata in all three concepts. It was determined early that each of the three concepts requires a user interface that allows for substantially more output than input, significantly higher than is common for any existing devices in this space. This means that sufficient personalized data must be available to the device for making accurate predictions, which in turn will alleviate the need for user input. Neither the image control concept nor the mood bank concept generates itself sufficient metadata, but they both rather require high-quality metadata for their functionality. An efficient user interface for the image control concept requires the easy labeling of people in the picture, as well as an easy distribution within the social network according to known security profiles associated with each recipient. Having the personal up-to-date social network readily available, knowing each person's status within the network and knowing who is at the event at which one takes the image becomes important metadata for enabling an efficient user interface. The mood bank concept also benefits from metadata that allows smart guesses about the mood one is in based on knowing one's activities. Moreover, the correct selection by the device of media intended for the mood change requires a certain amount of metadata associated with that media. The organizer-planner, on the other hand, can make metadata available if its functionalities in their sum stipulate the user to keep an always up-to-date calendar and social network with sufficiently low effort. The concepts were thus merged during the first innovation iteration to reflect the metadata requirements. The outcome is an integrated digital data management system on a personalized device with networked computing and data storage for the improved and integrated management of one's individual social network, business network, scheduling and task-planning, information archiving, and image sharing. Figure 4 provides a schematic overview of the integrated device.

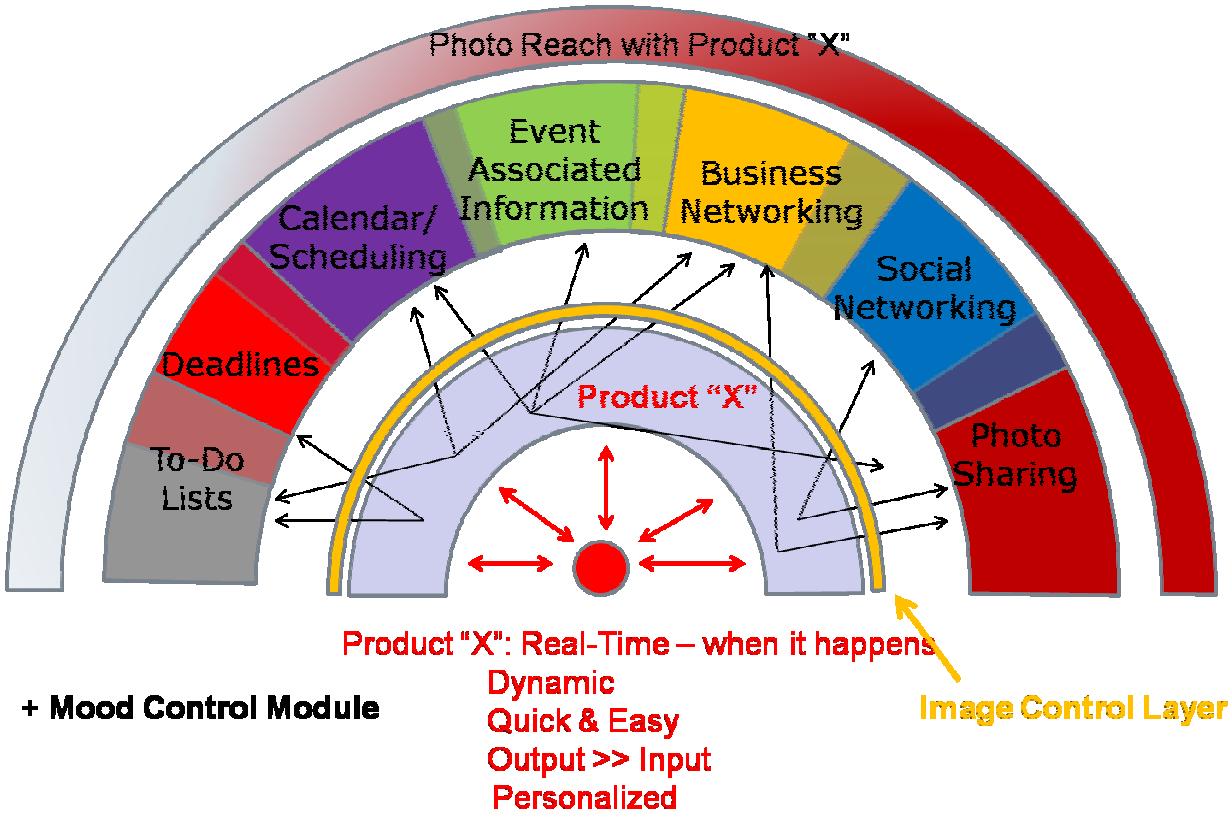

Figure 4. Schematic of Product "X" concept.

This complex concept can be broken down into modules of increasing complexity and system integration, which are best described at their itemized functionalities. The basic module is the organizer-planner as a device, that

- dynamically rearranges one's schedule upon any new entry request via optimization algorithms based on pre-sets and/or the learning of individual preferences and prioritizations;
- incorporates to-do lists and deadlines with progress tracking, dynamic rearrangement, and personalized reminders;
- incorporates previously unscheduled activities real-time by predictions based on patterns and/or GPS location with user confirmation;
- independently negotiates optimized meeting times and places between networked devices/systems upon issuance or receipt of a meeting request; and
- interfaces with the user by allowing him/her to accept, reject, or modify schedule recommendations or modifications.

If these features of the basic organizer-planner are sufficient for enticing the user to keep all events up-to-date, then enough metadata will be available from such a basic calendar-planner that, upon integration with a camera, one can create a photo album permanently associated with the event and the device can provide easy photo tagging based on an event attendee list.

The more advanced organizer-planner module additionally integrates one's individual social and business network. Since the basic organizer-planner provides metadata on one's social and business activities, the integrated version can now efficiently link events to the people in one's social and business network for easy recognition and addition, for event-based easy access to people's profiles and associated information, for updating social and business networks according to event sharing, and for tracking interactions with one's social and business network. Furthermore, it could include an instantaneous profile exchange capability between two or more people at a shared event via wireless data transfer between hand-held devices or via a network. The thus shared profiles can be incorporated into one's social and/or business network with organizational/hierarchical attributes based on event and user input. This would establish a permanent association between the event and contact initiation. Once the hierarchical attributes of people in one's social or business network are assigned, they can be incorporated into the independent meeting negotiation function of the basic organizer-planner. This negotiation function on top of the social network further allows the automatic recognition of shared scheduled events to enable coordination functionality around such events, or it can allow one to see current and scheduled activities or availability of people in one's social or business network, if appropriate permission by person and type of event is granted. This would enable spontaneous and planned participation in these events.

If one were now to incorporate a camera with the organizer-planner that is integrated with one's social network, the possibility of improved photo sharing with one's social network would open up. This could be done via an instantaneous photo sharing capability between two or more people at a shared event via wireless data transfer between hand-held devices or via a network. Alternatively, it could be accomplished via an instantaneous marking of a photo to be shared with anybody in one's social or business network according to pre-set or designated photo sharing attributes associated with the members in the network and preferred means of distribution. Additionally, one could associate photos with the profile exchange capability.

With enough metadata available in the organizer-planner integrated with the social network, the image control management module can be implemented. It would incorporate digital rights in any or all digital content that is transmitted or shared via any or all of the functions above and associate digital rights attributes with the people in one's social or business network.

The mood management module plays digital contents (photos, music, etc.) of defined length for inducing a desired mood change in the user. If no metadata is available, then the type of desired mood change needs to be selected by the user from a pre-programmed list. With metadata, the mood-changing digital contents can be computationally selected and composed according to a

stored personal mood change profile of the user. The digital contents, public or private, is sourced from any function of the device along with the metadata that attributes meaning and context to the digital contents with respect to the user's life. An important attribute of the mood management module is that the mood-changing digital contents cannot be predicted by the user. It would be additionally beneficial if the mood management module incorporates an algorithm that learns the user's personal mood change profile by monitoring the effect of digital contents on the user's mood, either in a set-up mode or in continuous operation mode. The user feedback could either occur manually by direct user input during or after the playing of mood-changing digital contents. It could also be automated by biometric feedback. Such automated feedback could consist of the digital capture and analysis of the user's facial expressions or the digital capture and analysis of the user's biophysical indicators (e.g., pulse rate, etc.).

Conclusion

In summary, we have presented a new method for starting the iterative innovation process from the market side solely on the basis of a sociological trend. The method eliminates the traditional difference between the innovators and the sociological group that carries this trend. This can only be achieved by combining real-world innovation with innovation education. The method was presented as a step-by-step process from team selection to discovery of specific market needs. The discovered market needs constitute an innovation opportunity upon which the iterative innovation process can be started. The general description of the method was followed by a real-world example that details the outcomes at every step along the way. The example also includes the first innovation iteration cycle, and the rich concept that resulted was described in detail.

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