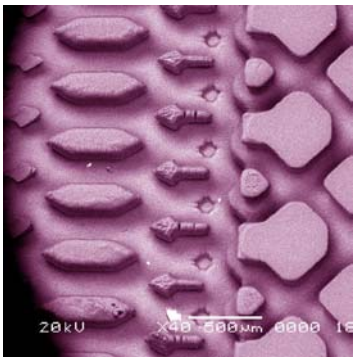


Cell Culture Network
Source: Eric Leclerc
www.nanopicoftheday.org

Building the Innovation Culture

Some Notes on Adaptation and Change in Network-Centric Organizations

Bryan Coffman
Principal, InnovationLabs

Abstract

Innovation has garnered more headlines recently as one of the core processes that every organization must nurture in order to retain its viability. Innovation in an organization goes beyond simply responding to change—it creates change in the environment that other organizations must respond to, and therefore can become a sustainable competitive advantage

Many organizations employ a top down approach to innovation. Strategy is formulated at the top along with the major initiatives for achieving it. Some of these initiatives will be innovative in nature, related to the development of an innovative process, product or service. Top down approaches may solicit input from deeper in the organization, but the formulation of the innovative ideas remains at the top. Hybrid approaches create a structure in the middle of the organization that encourages innovations from the bottom up and works to shape them into viable business ideas.

The approach described in this paper focuses on encouraging a distributed network to form inside the organization that takes on the role of much of the innovation work. Individuals connected to the network generate their own ideas, conduct experiments, log the results, build support, and help transition some of the ideas to formal pilots or direct implementation. The network employs features from several different morphologies and uses some principles from natural selection to recombine and improve ideas throughout the process.

InnovationLabs, LLC
257 Castle Glen Road
Walnut Creek, CA 94595
bcoffman@innovationlabs.com
(925) 934-1786
www.innovationlabs.com

Embracing and Resisting Change

Many management and organization development books and articles exhort their readers to "embrace change." But what, exactly, does it mean to embrace change? I believe it means to build a culture and associated organizational structures and processes that make innovation a daily way of life. Innovation, by its nature, embraces change because it is the stuff and process of change. The innovator uses change as fuel for action and food for thought. Whenever something new happens in the external or internal environment, the innovator sees in it the potential for uncovering new ideas, much like a landslide might reveal a new source of gold on a hillside. Regardless of how catastrophic the change, or how adverse it may seem to the organization, it holds the potential for a renewed capability to thrive.

Instead of creating a capacity to simply respond to change, an innovation capability creates the type of change that simultaneously allows the organization to adapt to the world around it but also influences the world around it to adapt as well. An innovation capability is not a change neutralizer—it's a change maker. It's also natural. We are all innovators by nature. In organizations, innovation can be developed into a practice and skills that are honed by the practitioners over time.

Many great books and articles have been written on change and how to manage it. I'm not an expert on any of those methods and I'm not attempting to replace all that has been written, but I wish simply to add a few notes to the score. If they end up adding some discord as well, then so be it.

Innovation does take a certain frame of mind that tolerates and sometimes thrives on waves of change. I believe this frame of mind might be somewhat easier to attain than many of us think. We commonly hear that people resist change. I disagree. People resist actions they believe will lead them into some sort of pain or discomfort. In extreme cases, they may indeed resist any and all attempts at change. However, it bears noting that all of us really want change. We want to make more, provide more for our families, become a better person, become healthier, stop smoking, whatever. We are constantly in search for changes that will make our lives better. None of us lives a stagnant life (even the most stagnant among us is gaining weight, and that, of course, is some kind of a change).

So first, I'd like for you to abandon just for a moment the idea that you are somehow hardwired to resist all kinds of change. It simply isn't true.

Now let's look at the kinds of changes that we actively do resist and why. I repeat that we tend to resist anything that we believe will cause us pain or discomfort. The key is the word, believe. It's fairly hard to predict the future, and in many cases, equally difficult to predict whether some course of action will create pain or pleasure, least of all whether in the convoluted interactions of a myriad of people it is our actions alone that lead to the result. There are some exceptions, but we learn these fairly rapidly. Jumping in front of a moving car will lead to

pain, so will any number of other actions. We are all aware of these and hedge against them in our daily lives by learned behaviors (not walking into traffic), by design (putting up guardrails), or by laws (cross only with the light).

Beyond these obvious examples of change that we want to avoid there's a vast gray area of potential changes that many of us become afraid of over the course of our lives—often without cause. Let me confine my remarks now to the organizational scene. We tend to believe that many changes that might be proposed in organizations will ultimately be to our detriment. This means, simply, that we fear we will lose our position or some privilege or advantage that accrues to our position. It is the first responsibility of management to mitigate this fear—to instill and support fearlessness throughout the company. Few people will willingly design their own termination and it is immoral to ask them, coerce them or deceive them into doing so. If management doesn't understand this, then the level of trust that is required by a culture of innovation will never appear and innovation will either proceed at the edge of a sword or it will inhabit a strong defensive tower like that built by traditional R&D departments.

Foundation Work: Trust and Self-Reliance—the Soft Stuff

Trust is the first law of the innovation culture. If you cannot create it or are unwilling to create it, then don't make the effort to go further. And while trust is a two-way street, if your organization is based on command and control, then it is incumbent upon management to take the first step and to continue to take steps to mitigate distrust. It will have to be done over and over, and at every turn the organization will look to you to prove what you mean by that trust. Why? Because it's obvious that command and control management is far more able to inflict pain or the threat of pain on employees, not the other way around.

It's also clear, however, that the world we live in abhors certainty. Even the most innovative company will fail at length. The most daring innovation may include within it a degree of new-found efficiency that spells the end for certain types of jobs and certain positions. The larger economy may wrench the fruits of innovation from our grasp. This is a part of existence. Trust in the innovation culture doesn't mean a guarantee of success or a guarantee of freedom from pain and suffering. It does mean that whatever happens, we are committed to facing it together and supporting one another through the process, often at the cost of some personal sacrifice. That's the nature of the contract in trust.

I don't think that the sports team is a good analogy for what I'm talking about. Nor do I think that the military combat squad or platoon is either. The sports team only risks defeat on the field of play. The combat squad risks death. The business unit risks something in between. An innovation is unlikely to cause loss of life, but it also may cause more damage than going back to the locker room in dejection. Innovations can damage families, homes, and lives. Innovations can also support lives, homes and families.

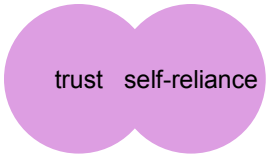
This article is too short to go into the many methods or techniques for

building trust in an organization. Certainly, it starts with and continues with honest dialog. It means working together. It means sharing information. It is at the same time a natural human tendency and a state of organization that is difficult to maintain. I only caution the reader to beware of stock methods for building trust. I believe that methods might be helpful but that each situation is somewhat unique. There are few cure-all prescriptions in human relations.

Trust starts to ameliorate the fear that grows from believing that innovation in our organizations will lead to pain. But trust isn't enough. We also need the internal resiliency that knows that we can survive no matter what. Self-confidence—or self-reliance—matters as much as mutual trust. If the organization falls apart despite our mutual efforts, we individually believe we can find another opportunity. And we hedge our bets. We are constantly looking for ways to improve ourselves: to add new abilities or nurture new skills. There will be ups and downs, but we will ultimately survive them all. Self-reliance is a foundation for trust as well. We tend to have less trust in those who have little trust in themselves.

Do you believe in yourself this way? If not, then no number of iron-clad contracts, or years of tenure, or guarantees will ever relieve you of that very deep-seated fear that you are vulnerable. Or that you believe you are vulnerable. Once you do find self-reliance, then the purpose of all these old guarantees changes. A contract facilitates clarity; tenure frees you to grow and stretch and experiment; every guarantee that you seek is only a small tool in a greater search for relationships based on trust that will yield mutual value. The nature of these assurances changes and you no longer look to them for something they can't deliver—freedom from your own fear or protection from a world of change.

Much of the business world doesn't work like this. Take steps to change it. Start with yourself and the person next to you.



In an era of analysis where everything is either measured or subjected to skepticism if it can't be measured, it may seem either vague or simplistic to claim trust and self-reliance as the underpinning foundations for a culture of innovation. So in deference to the times I'll present a simple questionnaire that will add some quantification to the issue.

On a scale of 1 to 10 with 1 being low and 10 being high,

1. How much do you trust your co-workers to support you?
2. How much do you trust your management to support you?
3. How much do you trust your employees to support you?
4. How much do you trust yourself to support the organization and the people in it?
5. How confident are you in your ability to survive organizational change, no matter what?
6. How self-reliant are you—how much can you depend on your own

skills and abilities to help you navigate a world of change?

Have everyone take the questionnaire or something similar to it. If the scores are low, then you have work to do.

Networks: The Structure of the Innovation Culture

There's a role for command and control organizations. As we move deeper into the 21st century, I have more difficulty finding it, but that's my own personal hang-up. It's clear that command and control organizations can muster resources and delegate and divide work. I just don't think they can move fast enough or keep enough options open to respond to the current snowballing rate of change. Each level of authority helps to direct and manage resources more efficiently while also serving as a bottleneck for ideas and a straitjacket for flexibility.

Networks, however, can maintain options. In actual fact, most good organizations are a combination—however uneasy—of centralized command and control and a distributed network of semi-independent but connected nodes (I'll use the term agents, which I borrow from the sciences of complexity). The network gets work done in spite of the system and the command and control structure provides at least a partial map of organizational capability, an envelope of appropriate scope of work and an overall strategic direction. Command and control sets the rules of play and if they are favorable to the development of a network, then one will form and its benefits will accrue to the organization. If the rules are unfavorable, the network won't form and the organization is left to respond to the complexity of the world with a centralized, top-down approach.

The command and control response to the problem of innovation is the R&D department. I don't have a problem with R&D departments but the structure is less than useful for a variety of organizations. In any case, R&D is focused on discovery; it's really not a locus for innovation. Innovation is an organizational ability to do three things: find new ideas, convert them into value, and distribute them through the organization so that the value can be achieved over and over. Discovery of new ideas is only the first step—albeit a necessary one.

Some ideas require the focused energy of the bulk of an organization for their emergence and success. Other ideas can emerge in local situations and remain local or propagate across the organization in a more organic fashion. Many ideas lie in between and require the focus of the organization at times or rely upon a distributed system of support at other times.

Command and control is good at organizing top down, large scale piloting and implementation programs. Networks are good at proliferating dozens of experiments, testing them in ad-hoc fashion and distributing the best of them in cascades across the organization. However, a culture of innovation depends solely upon a network composed of most if not all of the members of the organization and quite a few representatives from outside its traditional boundaries (customers, students, providers, even competitors). In successful and vibrant innovation cul-

tures, the number of members from outside the organization is likely to dwarf the number of those inside.

The two types of structure can fight against one another. Command and control-only organizations (on both the management and labor sides) tend to respond to networks as if they were viral infections and attempt to destroy them. By the same token, some networks are quite good at subverting the goals of the command and control organizations that are their hosts. This behavior can escalate into a cycle of aggression if it's not constantly addressed through honest dialog.

Network Morphology

Networks are built of nodes (or agents) and connections between them. Nodes comprise a combination of people and equipment (like servers to store information). Nodes take in some combination of information, matter and energy and convert them to outputs using internal rules. The outputs also take the form of some combination of information, matter and energy. In most organizations the informational component of the output is the most important. Sometimes connections are direct and ephemeral as when people are talking to one another at a party. Other times the connections are facilitated through an infrastructure of channels and signal management devices like the fiber optic lines and servers of the Internet. Connections include not only the way in which the nodes or people are connected but why they are connected. Without a reason for connecting, networks fall apart. Anyone who has designed intranets or websites knows that simply providing the mechanism for people to interact doesn't guarantee the interaction will take place. People need a burning reason for being connected. And for staying connected. Whatever it is that gets shared across the network must have perceived value by those in the network. In other words, the individuals will trade something of value in exchange for the possibility of finding something of perceived equal or greater value in the network. Without this equation, the network won't form or persist. When building the innovation culture, it can take some time and experimentation and dialog to uncover this equation and apply it. Be patient and persevere.

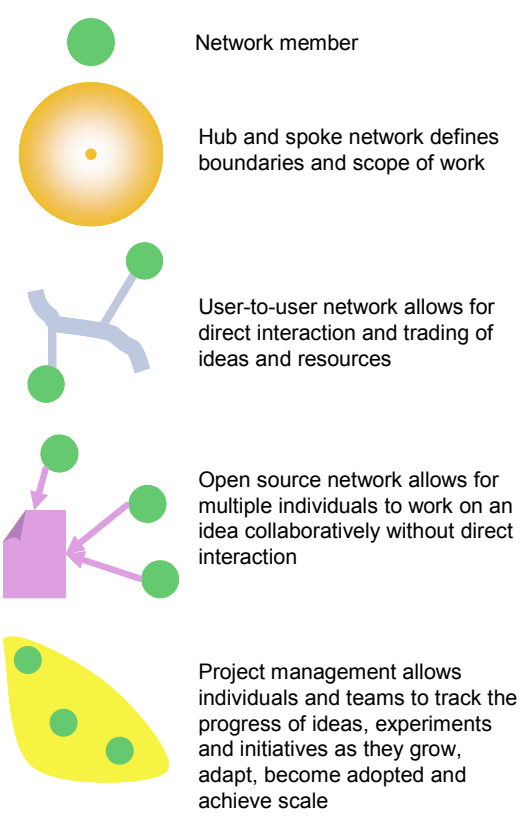
Types of Networks

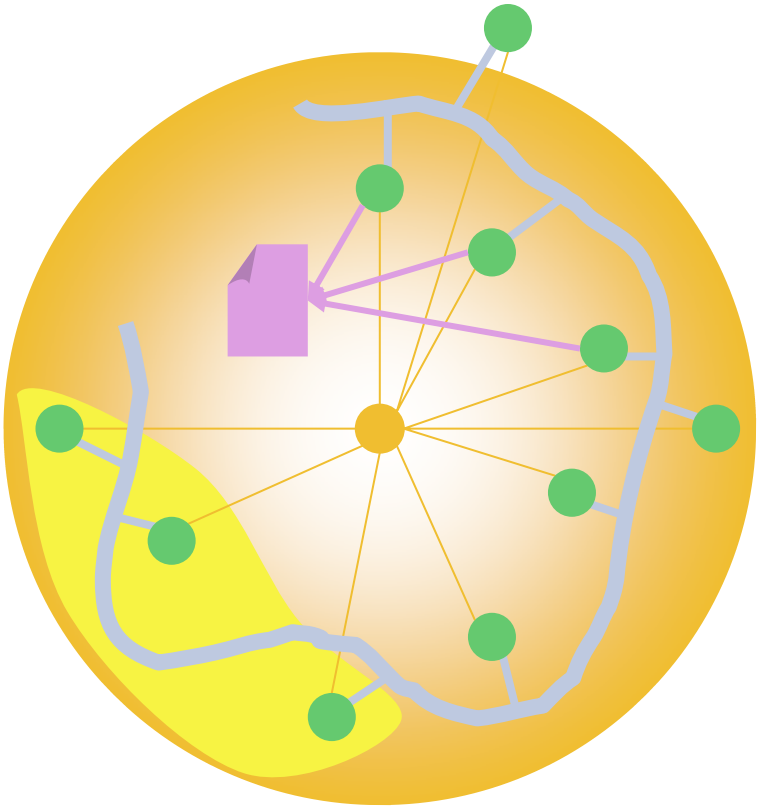
There are several types of agent-based networks. Some work for creating the innovation culture and some don't. Amazon.com is a hub and spoke network. All of the users are connected to the center where they can shop but they aren't connected very well to one another. Amazon provides the value but the individual users don't really contribute value to the network short of providing product reviews. [I'm aware that Amazon allows you to buy from a variety of sellers, similar in ways to eBay—I'm referring to the retail side of Amazon in this example.] A different example of a network is eBay—a user-to-user marketplace. Users are connected directly to one another while eBay plays the role of a middleman. The company makes the basic rules for a market and provides the mechanism for trading. A third example is Wikipedia, an open source collaborative. Wikipedia is the largest online encyclopedia and it's all created and supported by users. Right now you could go to

wikipedia.com and create an article on whatever subject you fancied and post it. You could even navigate to an existing article and make changes to what someone else wrote. The simple software behind the scenes allows for the interaction. In this case, users are not directly working with one another except through the medium of the pages of information they create. Collectively they are building something that none of them alone could dream of. Users are connected to one another via a myriad of creations that they collectively contribute to. Finally, there are some well-run project management networks (usually intra-nets) where a group of people can access information about a project asynchronously and remotely. The software keeps track of updates and warns users of potential scheduling and resource problems. Small groups of users can convene by phone or through the Internet to resolve these problems as they occur.

To summarize, the four types of networks are: (1) hub and spoke; (2) user-to-user marketplace; (3) open source collaborative; and (4) project management intranet.

Network Architecture





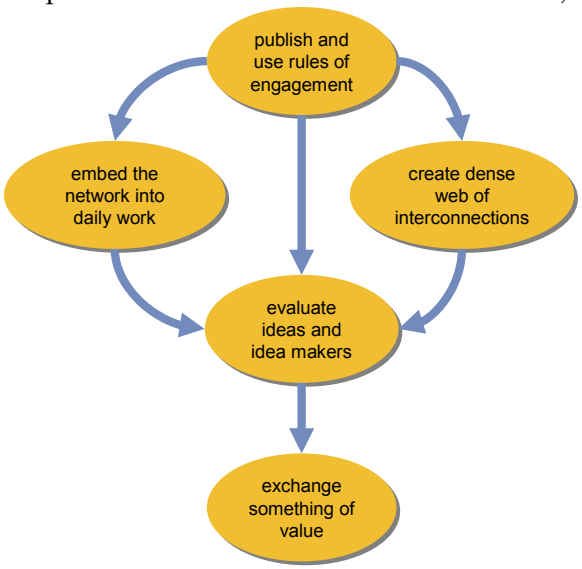
Network Design and Capabilities for the Innovation Culture

The ultimate network required to support the innovation culture borrows features from all of these types of networks. Like Amazon, some aspects of the network should come from the center and pervade the network. Organizations can experiment but they can't move in all directions at once. If the network does not yield a cohesive outcome on its

own, most organizations will intervene with some degree of central control. Like eBay, it allows for individuals to interact directly with one another and is set up so that they exchange something of value with one another that they are willing to trade their time and attention for (or in some cases other types of resources). Like Wikipedia, it allows everyone to contribute in an asynchronous way to the creation of something larger than themselves and the product is something that all of the users can browse through and gain value from. The network enables subsets of users to form sub-networks to focus for longer durations of time on specific projects, so it takes on some of the characteristics of a project management intranet.

Networks coalesce around the exchange of something of value in the eyes of its members. While trust and self-reliance may be the foundation of the innovation culture, the superstructure is built on this formula for the exchange of value. The value must in part be intrinsic: the members of the network find value from inside themselves that compels them to belong. If the value equation relies too much on extrinsic motivation, like paying people for their involvement, its success is more problematic. Most organizations will embrace some combination of intrinsic and extrinsic motivation. [I don't consider the necessary provision of resources to fund innovative ideas to be extrinsic motivation. Some of these funds may indeed go to the individual innovator, but the funds are not paid to network members simply to get them to participate.]

A group of repair technicians may desire answers to hard-to-solve problems from one another. These answers save time, and reduce frustration on the job, not to mention making a customer happier, faster. Teachers might exchange ideas for how to conduct classes in order to improve the environment in the classroom, enhance the quality of the educational experience and make their job a little easier. There are a number of websites that catalog such ideas but they are mostly centrally maintained and lack the interactive component of the network that allows individual members to work together.



The network needs a way for evaluating ideas and the idea makers. On eBay any buyer or seller can see how other buyers and sellers rank—whether they are trustworthy or not. The community evaluates its own members and the quality of the service and products that they each provide to one another. Amazon allows shoppers to rate the value of each other's reviews. It ought to be easier in the network to find popular ideas based

on their interest rating. Popular ideas then become more popular—a positive feedback loop. In order to allow backwater ideas a chance at the light, networks need to employ a capability for randomness. As users browse through ideas and other user profiles, they should be presented not only with the most popular ones but with a random selection of brand new ones and not-so-popular ones as well.

Information in the network is densely interconnected. If someone comes up with an idea for an innovation, other users ought to be able to see how this idea connects to other ideas and people. Either the idea itself has links to other ideas, or word search engines allow the connections to be made. Articles on Wikipedia model the dense interconnectivity desired.

Networks also require a simple set of rules of engagement. Sometimes these are rules of behavior; other times they are rules for how to use the network and its supporting software. In the better networks, these rules emerge from the community of users. One design feature that behaves like a rule is to make the information core of the network email enabled. Most people in organizations manage their work through email. However inefficient the tool seems to be, it has definitely become the dominant design. Intranets, blogs and other group tools tend to fail unless they are also email-enabled in some way. This means that relevant additions or changes in the Intranet generate emails to the appropriate network members with embedded links to lead them back. This is a push-type advertising model and allows information in the network to behave like agents and send signals that something has changed and should be noticed.

In an innovation culture, the network is embedded into everyone's daily work: to stimulate the generation of ideas, the testing of these ideas as limited impact experiments, the sharing of the results of these tests, the scaling of the successful experiments, and the recombination of ideas, experiments and tests with one another to spur the creation of yet more ideas. The individual users are not posting ideas for other people to try out. Instead, they're sharing ideas that they intend to experiment with themselves or ideas they have experimented with already. The network isn't some big suggestion box. The final destination for ideas is not at the feet of senior management, but at the feet of other members of the network.

There are notable exceptions. Some ideas imply system-wide changes. These ideas will require the building of a coalition of support and resources throughout the network. Some members of the coalition will likely be managers with discretionary budgets or internal innovation venture capital groups who troll the network regularly for investment opportunities. Some ideas are difficult to test without implementing them. Changes to a payroll accounting system, for instance can be simulated but the effects won't really be known until the changes are implemented. For such high magnitude ideas a portion of the network may again coalesce into a coalition that may employ a more formal piloting approach. System-wide changes like these are often planned as

major initiatives, sometimes converted into pilot programs and then implemented. Nevertheless, much innovation can take place inside organizations in the form of experiments with local, limited scope and impact.

Employees in the innovation culture cannot abdicate their responsibility or the need to share some of the risk of innovation. They must also be supported in this effort by policies, practices and resources that acknowledge this risk and provide space for experimentation. There is no guarantee that experiments will run without unpleasant consequences, however. This is part of life. The organization shoulders some risk and so does the individual innovator and his or her direct managers. Failure in life is never OK. It always has consequences; sometimes minor, sometimes catastrophic. An innovator never sets out to fail. Experimenting requires the consideration of a number of options, many of which will not work, but they are usually taken on with some thought for potential outcomes. Everyone in the innovation culture strives for success and learns from failures by documenting them and hearing about them from others. This aspect of the network is very difficult for us as human beings with sensitive egos. However, we must learn to share what does not work for us as well as what works. The successes will naturally attract more imitation and adoption but the failures can often be slightly modified and successfully adopted by others in slightly different situations. Here again, self-confidence, self-reliance and trust play significant roles in the success of the network and the sharing of information.

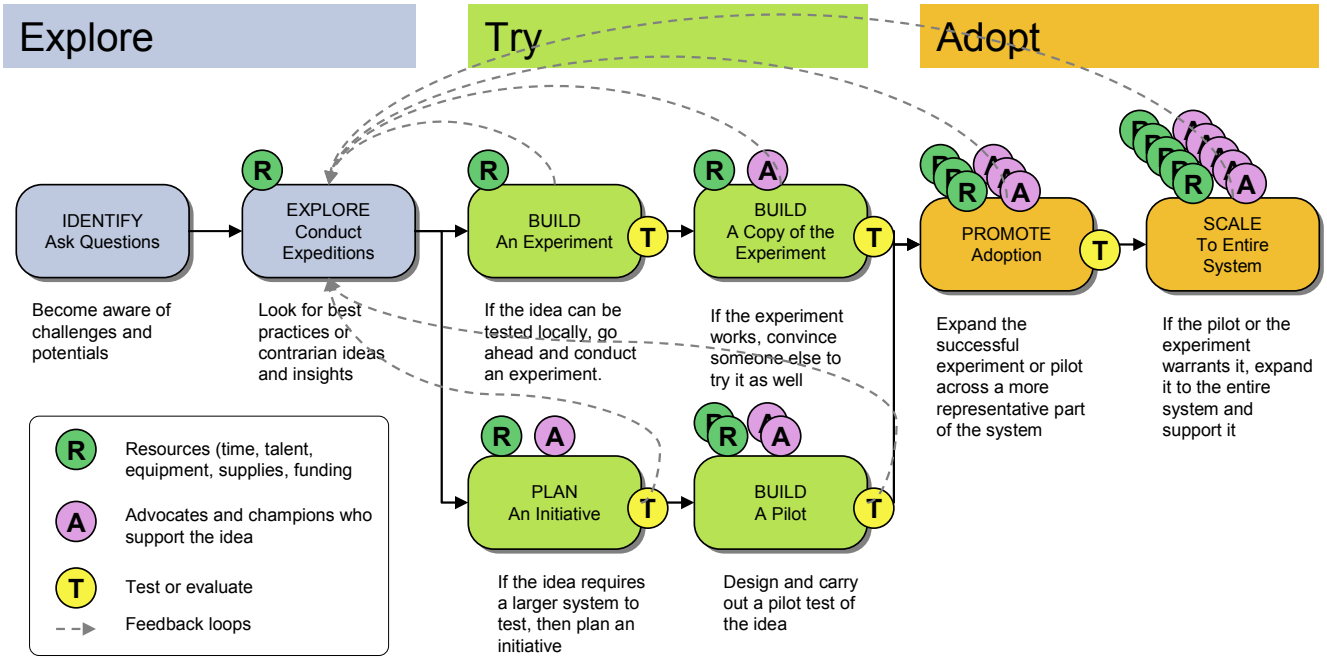
The Core Process of the Innovation Culture

Innovation happens through a process of exploring, trying and adopting. The word, innovation means something new or perceived as new. New solutions, products and services are only found through exploration, often from far afield. As new ideas are uncovered, or created through combination of existing ideas, it's incumbent on the innovator to try them in a low-risk, localized experiment. The innovator takes the successful ideas and builds a coalition of support around them so that they improve their chances of being adopted and scaled up to full implementation.

It would be nice to think that this is all a rational process, but it's not. Exploration is the difficult process of teaching ourselves to see the unfamiliar in the familiar. Trying is just hard work punctuated by bouts of frustration and episodes of elation. Adoption is a social process of marketing, selling and politics.

Within the process, every individual in the network is responsible for five activities: exploring, trying, testing, exchanging and documenting. They explore ideas, try them by building them into experiments, test the results, and then seek to interest others in what they have done through some medium of exchange. Everyone is trying new ideas and testing them. Everyone is documenting what they have done. All of this is happening simultaneously, in parallel. People can add to each other's work so that over time the various models are shaped up and made more robust. It sounds like a lot of work, and it is, but in practice, it

consumes a tiny percentage of the effort of the organization. Most of an organization's energy is spent on maintaining itself and replacing lost capabilities. Any remaining energy should be devoted to innovation in both grass roots and top down approaches. If operations consume all of the organization's energy it stops growing. When it stops growing, it becomes less resilient and begins to atrophy.



Explore

The exploration for new ideas requires three possibly conflicting states of mind. The first is direct expertise: the explorer needs to be familiar with the subject matter under consideration. Few innovations in any field are uncovered by someone who is totally uneducated in that field. Innovations in chemistry require at least some background in chemistry. The second required state of mind is innocence, or what some call the beginner's mind, or the inquiring mind. This is a special ability to look at something familiar from a new perspective as if seeing it for the first time. It also includes the practiced ability to ask good questions that open the doors of inspiration. There are a number of techniques for doing this, some of the most popular promoted by Edward deBono. The third state of mind is lateral expertise. Sometimes it's possible for a physicist to uncover an innovation in the social sciences. The physicist brings his models into a different domain. Sometimes there is a direct attempt at application and other times, simply the way the physicist has been trained to think is enough of a catalyst to precipitate a new idea.

Exploration can be aided through the use of expeditions. Chances are that someone else out there in the world has already wrestled with the same questions. Find out who they are and what they have done if pos-

sible. Talk with all the people related to the area you're exploring. If you're trying to innovate in the classroom, talk to students, former students, drop-outs, college graduates, businesses, people who never went to school, and so on. Fill yourself up full with the exploration. Don't just read: get out there and interact with other people in dialog. Listen. And log your expeditions so that others can benefit from what you've learned.

Try

Trying comes after exploration. Some ideas will emerge and now it's time to actually put them into practice. The word try is related to the word trial. There are two tracks: local experiments and broader initiatives.

If the innovator can play with the idea in an experimental way, he or she should do so. A teacher should innovate at the classroom level. An administrator can innovate at the school level. The experiment is a trial of the new idea and of the innovator's abilities to execute the idea. This stage of exploration will likely not require great hoards of resources. Probably one or two people and some discretionary budget to cover expenses will do. At this stage, management should be aware of the experiments, but mostly support them and aid the experimenters.

Some innovative ideas are bigger than local experimentation can accommodate. These will require more formal planning, application of resources and perhaps a pilot program. Sometimes the pilot program should be discarded in favor of simple, system-wide implementation. If possible, build a simulation of the idea before the implementation.

Test

After an experiment, it's natural to ask, "well, did it work?" You won't know unless you tested the idea. Usually this will require some sort of quantification or measurement. Anything can be quantified, but not everything can be measured. I can measure your core body temperature with a thermometer. I can only quantify whether you're having a good day or not by asking you to rate your day on a scale of 1 to 10. Choose the parameters of your test carefully. You'll need to use them to convince others that your experiment is worth trying (why should we do this?) and to also help you understand whether you've made an improvement through the innovation (did it actually work?). Some types of data are good for selling ideas and some are good for understanding whether the idea worked or not. Some types of data are good for both, but be aware of both types of needs.

Adopt

In some ways the exchange is the trickiest part of the individual process. Most of us who work in organizations are well versed in our jobs—what we do every day. We're less comfortable with the process of convincing others to adopt what we have been doing. Some feel that it's intrusive or pushy. Some don't like the idea of selling. The rest of us simply have never had the opportunity to hone the skills.

There's a role for training and education while building the culture of innovation but in a network-based, distributed system focused on local experimentation, it's important to teach people how to share and pro-

mote their own ideas. After all, the long term health of the organization depends on good ideas finding broader acceptance. Avoid funneling all ideas through individual managers. Managers are great resources for supporting the selling process, but too much is lost in a handoff from the innovator to his or her manager. A part of the selling process also includes formal planning. The most successful experiment

Usually in the exchange, the tested experiment is traded for additional resources and advocates so that some momentum can be built. The advocates need to see how their support will benefit them (or how it will benefit the organization and its stakeholders for those who are more altruistic). Gatekeepers need similar convincing since resources for innovation are always limited.

I recommend that successful experiments be copied on a limited scope if possible before broader adoption is pursued. The innovator learns a great deal trying to transfer his or her successful experiments to the control of others. Without this learning, the adoption process assumes unnecessary risk.

In the case of larger initiatives, it's the plan that's sold and adopted. The plan may recommend an extensive pilot program or it may recommend direct implementation.

Documenting the Work

Throughout all five of these activities, each individual is responsible for documenting their work. Without the documentation and without the other members of the network using the documentation, the grass roots efforts are largely wasted. Every new idea is invented from scratch. New ideas can't emerge from the practiced combination of existing ideas. People from across the system can't spontaneously build experiments of their own based on the work of others.