

Fear Less
And other Patterns for Introducing New Ideas into Organizations

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The work in using and writing patterns began with Christopher Alexander who wrote *A Timeless Way of Building* [Alexander79] and *A Pattern Language* [Alexander+77] in the 1970s. When the software community began studying his ideas, interest in patterns began to spread throughout the software development industry in the 1990s. However, efforts to introduce patterns into organizations have had mixed success. The patterns presented here are the beginning of a pattern language whose focus is the introduction of a new idea into an organization. When the language was begun, the focus was on introducing patterns into an organization but over the years, we have come to realize that most of the patterns can be used for introducing most any new idea. The contributors are from organizations all over the world. We have found a close connection between our experiences, which is reflected in the patterns we have written.

The creation of a pattern language should be the work of a community. Many people have contributed, and continue to contribute, to the development of this language. These include the pattern authors, those who have attended the *Introducing Patterns into an Organization* workshops, and the countless others who are providing feedback and ideas for improving the patterns.

Especially valuable was the effort of all the shepherds who have worked with us along the way: Ken Auer, PLoP '97, David DeLano, PLoP'99, Jim Coplien, EuroPLoP'00, Brian Marick, PLoP'01, David Kane, EuroPLoP'02. Special thanks also goes out to Alan O'Callaghan for his unwavering support and his invaluable help with some of our conference sessions.

As Christopher Alexander states, we hope that “many of the people who read, and use this language, will try to improve these patterns—will put their energy to work, in this task of finding more true, more profound invariants—and we hope that gradually these more true patterns, which are slowly discovered, as times goes on, will enter a common language, which all of us can share.” [Alexander+77]

This is a small “slice” of the whole pattern language, created to make an up-to-date, but not too lengthy submission for the EuroPLop proceedings. It contains only patterns that describe roles that are played by individuals in introducing change into organizations. References to other patterns are retained. All the patterns can be seen at: <http://www.cs.unca.edu/~manns/intropatterns.html>

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Big Jolt

I was invited to give a patterns presentation at a company in another city. Afterwards the local Evangelist said, "You didn't say anything I couldn't have, but more people will listen to you. Your talk will have greater impact than mine would and then they'll come to me for more information."

To provide more visibility for the change effort, invite a well-known person to do a presentation about the new idea.

You're an Evangelist or Dedicated Champion working to introduce a new idea into your organization.

Brown Bags and Study Groups give a new idea some visibility in your organization, but at some point, you need to attract more attention to the effort.

Some people are too busy to attend Brown Bags or Study Groups, but will take time to hear an expert in the field. When a speaker has credibility, people will be influenced by what he has to say.

Even those who have adopted the innovation need to have their interest reinforced. They need something to re-energize their interest and strengthen their commitment; otherwise they may fall back into old habits or forget the new approach. [Rogers95]

Therefore:

Arrange for a well-known person who can talk about the new idea to do a presentation in your organization.

If funding is not available, entice the expert by pointing out that his presentation is an opportunity for publicity for his latest project or book. It can even jumpstart a possible topic for a Study Group in the organization.

Increase the probability of a significant audience with lots of publicity before the event, using In Your Space and e-Forum, and personally inviting and reminding people. Tell Connectors. "Big name" people usually expect a big audience, and may consider it an insult if they don't get one at your organization. This is especially important if the speaker is not being paid.

Schedule a pre-event meeting so the speaker can tailor his talk to the needs of the company. Give the speaker some insight into the local power, political issues and the organization's true priorities. Be sure the speaker is willing use Just Enough to speak at a level the organization can absorb. "Big name" people may wish to talk about something that individuals in the organization are not prepared to understand.

If the speaker is willing to do more than just a presentation, arrange a Royal Audience to reward those who have helped with your new idea in the organization and to make an impression on the Corporate Angel or Local Sponsor.

If the speaker permits it, videotape the presentation and make the video available for people who could not hear the speaker live. Schedule some group viewings so that you can be there to answer questions. Use both the presentation and the video sessions as an opportunity to Plant the Seeds.

This pattern “builds” an event that will increase awareness of an innovation and provide some training for it. A big name speaker will catch the attention of even the busy people and will raise your credibility since you were able to arrange for this person to visit the organization. Even those who cannot attend may be influenced by the publicity before the event and the talk about it afterwards.

The risk is that it can create more enthusiasm than you are able to handle. Make sure you have people to help you after the speaker has gone. Without appropriate follow-up, the enthusiasm is likely to fizzle. Also, dealing with the celebrity will involve a lot of extra overhead, divert resources, and distract you from higher-priority tasks but will not necessarily contribute to your long-term community development. [Kim00] Make sure this event is held in the context of a larger plan.

The interest in and inquiries about patterns increased significantly in one company after a presentation by Jim Coplien.

One Dedicated Champion said they “use this as much as we can. For some reason, people don’t believe the in-house experts as much as a visiting ‘dignitary.’”

A Dedicated Champion invited a well-known speaker and saw a difference between those who heard the talk and those who did not. Most of those who attended were willing to hear more, while most of the others were still skeptical.

Originator: Mary Lynn Manns

Champion Skeptic

We need a balance between two conflicting needs—the most skeptical scrutiny of all hypotheses that are served up to us and a great openness to new ideas. If you are only skeptical, then you never learn anything new. You become a crotchety old person convinced that nonsense is ruling the world. (There is, of course, much data to support you.) On the other hand, if you are open to the point of gullibility and have not an ounce of skeptical sense in you, then you cannot distinguish useful ideas from the worthless ones. [Sagan87]

Ask for Help from strong opinion leaders, who are skeptical of your new idea, to play the role of ‘official skeptic.’ Use their comments to improve your effort, even if you don’t change their minds.

You’re an Evangelist or Dedicated Champion trying to Involve Everyone. You are using Fear Less and Adopt A Skeptic to try to interest skeptics in your new idea.

Some of the resistors are strong opinion leaders in your organization.

Skeptics who are also Connectors know and talk with many people across the organization. If they are vocal about their reluctance to accept your new idea, this will stifle your efforts unless you change their minds, limit their impact, or ask them to help you. The first option may not be possible – you may not be able to bring them to your side. But if they are offered a role in the initiative, they could change from a skeptical outsider to an insider who could make a positive contribution. They do this by encouraging a “devil’s advocacy” approach to decision-making. This is when a solid argument is made and then

subjected to grilling by another person or group. Proponents suggest that it allows only the best plans to survive. [O'Keefe02]

A certain amount of opposition can be beneficial. If there are several strong opinions that provide different points of view, there is likely to be more thought and discussion. As a result you will get a consensus of all the ideas. [Bouldin89]

Therefore:

Ask for Help from a skeptical opinion leader to play the role of 'official skeptic' or 'official realist.'

Encourage him to point out the problems he sees with the new idea. Be sure he understands that his opinion is helping to discover possible problems with the innovation. Invite him to all meetings and presentations, but if he can't attend, give him opportunities to talk with you personally.

Use the information these champion skeptics provide. They can anticipate problems so that these issues can then be addressed. Their presence can also ensure that others do not get caught up in the hype. They can help set realistic goals that deliver real value.

Don't take the idea of "champion skeptic" to the extreme. A moderate amount of disagreement is all right but, avoid people with strong personalities who are openly hostile. [Bouldin89]

If there is more than one skeptic who should be involved, you might consider creating a 'Greek Chorus,' a forum where skepticism is featured. This could be a one-time workshop or a group of people who regularly contribute to meetings.

This "builds" a relationship with a vocal, influential skeptic who can't be included in any other way. The invitation to become a Champion Skeptic will encourage vocal skeptics to become involved, which also provides the skeptic the opportunity to learn more about the innovation. Assigning this role can feed the skeptic's ego. Recognizing and validating the ideas of an argumentative skeptic will give him positive reinforcement, and may no longer make it fun for him to argue any more.

If the skeptics are a strong influence in the organization, amplifying their objections could result in the non-adoption of your idea. You must be a resilient Evangelist—prepared to handle criticism.

Risk management has to acknowledge directly the Can't Do possibilities. One solution is to have a Can't Do specialist. Explain at the outset, "Lillian is our Can't Do specialist, our risk manager. It's her job to focus on the uglies, all the could-go-wrongs that might interfere with our plans. All the rest of you will succeed if you achieve your ambitious goals. Lillian succeeds if she warns me of every possible eventuality that might reasonably be expected to thwart us. She fails if I get blindsided by anything she hasn't warned me about." [DeMarco01]

I was working on a change program where I saw the evolution of the avowed cynic to the best pragmatist. He was a shift worker who (thanks to automation) was no longer going to receive shift bonuses as a result of changes. His buy-in was sought along with his skeptical opinions. He realized that he could either get involved proactively, or be a "victim" (he was going to lose his bonuses either way).

A couple of people in my firm are good at "being critical." They have great respect, and I get along well with them personally, but they are also difficult people to please. I make a point of having at least one of these folks in any steering group.

One programmer on the team hates everything initially but when she starts to use it she usually likes it. Almost everyone on the team listens to her. Her initial skepticism, but openness in the long run, makes her credible. Initially she seems to work against you but in the long run, she keeps you honest and, if it's a good idea, she'll come around. [Hill02]

Originator: Jon Collins

Connector

The people who were the most helpful to me when I started introducing patterns were the secretaries. They know everybody and everything. They are the power behind the managers who make important decisions. They know who to talk to about any issue. They became my most powerful resource.

To help you spread the word about the innovation, find people who have connections with many others in the organization.

You're an Evangelist or Dedicated Champion trying to introduce a new idea into your organization. You are doing some things to give exposure to a new idea, but you know that many people still need more of a Personal Touch.

Your organization is too big to personally contact everyone.

Studies have consistently pointed to the importance of informal networks. This is how people learn about new ideas, coach one another in trying them out, and share practical tips and lessons over time. The information that passes through them has credibility. When people we know talk about something new, we naturally pay attention. [Senge+99]

“Word-of-mouth epidemics” are created when people talk with others. Some people have a gift for bringing the world together and seeing possibilities in everyone they meet. As a result, they know many types of people in different social circles. The closer an idea comes to this type of person, the more opportunity it has. [Gladwell00]

You have to work within the formal structure of your organization but you don't overlook the ability of communication networks to spread the word. You'll improve your chances for success by taking advantage of the many informal relationships in your organization. [Bouldin89]

Therefore:

Ask for Help in spreading the word about the innovation from those who know and communicate with many others in your organization.

These people will be easy to find because they know so many people, including you! Begin to look for them among the Early Adopters – this group is generally more social than Innovators and more likely to be members of many different social circles. [Rogers95] While they have the special ability to connect with others, they do not need to be close friends with everyone. They will have close friends (“strong

ties”) that typically share interests or proximity, and also have many “weak ties” that link them to other social circles. [Gladwell00]

Use Personal Touch to convince them of the value in your new idea. If they are Innovators, it should be easy to convince them. If not, it will be well worth your effort to take the extra time with them because once they become interested, their connection to others will decrease the effort needed to spread the word. Once the “connectors” are convinced of the value in the innovation, they will talk with others about the innovation. Remember to Just Say Thanks.

Be wary of “connectors” that don’t support the innovation. Consider giving them the special role of Champion Skeptic.

This pattern “builds” connections that you might not otherwise reach on your own. It will allow you to reach more people than you can on your own.

But “connectors” can also bring in more people than you have time to handle. So make sure you have interesting things to tell them and some plan of action in place so that the new people don’t become intrigued only to find out that nothing interesting is really going on.

There were many Connectors at our company because it funded organizations that encouraged these communities -- the music club, the flying club, the golf club. There were also people who played bridge at lunch—who went out for lunch every other Friday (pay day). Some people had known each other for years—now they could know each other outside work—but they talked about work, of course.

When I read this pattern, I realized that I was a Connector. I know and talk with many different people throughout the organization on a regular basis. So when someone tells me something interesting, it isn’t long before I’ve shared the news with others.

While I was trying to spread the word about patterns, I noticed that Ned was quite a popular person. I often saw him chatting with a different group of people at lunchtime and arranging after-work margarita breaks. So I stopped by his office one day and personally invited him [Personal Touch] to a patterns presentation [Hometown Story]. After the event, I stopped by again and addressed his questions. Once he was convinced of the value in patterns, he would often stop me in the hallway to tell me about the latest person he talked with about this new idea.

Originator: Mary Lynn Manns

Corporate Angel

My boss stopped by my cubicle and said, “I hear you’ve been giving brown bags on patterns. I think you should give a presentation to the vice-president. His staff meeting is in a couple of weeks.” I agreed but I didn’t understand why the high-level managers needed to hear about design patterns. I thought these were good ideas for developers but that was it. I was so wrong. That presentation brought training and the purchase of cases of books and, eventually, a new job description that allowed more time to work on patterns. My ideas wouldn’t have gotten far without buy-in from upper management.

To help align the innovation with the goals of the organization, get support from a high-level manager.

You're an Evangelist or a Dedicated Champion trying to introduce a new idea into your organization.

Support from local management will provide some attention and resources for the new idea, but you need high-level support to have a more lasting effect.

Brown Bags and enthusiasm can only go so far. Big-ticket items – training, books, conferences, and visiting gurus (such as a Big Jolt or Mentor) – are needed if interest in the new idea is to grow. But since each level of management, such as a Local Sponsor, has authority to spend only in a certain area, resources can be limited. High-level support, someone who believes in the importance of the innovation and will lend appropriate coaching and direction, can make many inroads easier. In addition to resources, they can provide the collaboration and encouragement to align the new idea to the broader goals of the organization. This is vital to a successful change effort. It is this alignment that will make the initiatives last beyond any changes in local management.

The higher you go in your organization to reach and convince, the more secure your effort will be. [Bouldin89] An analysis of the best technology-transfer practices of a broad cross section of government agencies, research institutions, and national and industrial laboratories identified the importance of *angels*, high-level executives who protect start-up projects until they mature. [Souder90]

Therefore:

Enlist the support of a high-level manager who has a special interest in the new idea and will provide resources and direction to support it.

Talk to high-level managers about the new idea as early as possible. Explain how the innovation is Tailor Made to match the needs of the organization and, if possible, show them the results of a Guru Review.

Look for high-level supporters that are respected across their organization; otherwise their involvement could hurt your cause. The wrong kind of executive support can give the impression that the new idea is being “railroaded” through the organization. [Senge+99] Be wary of those who embrace the new idea simply because of personal interest. The initiative may have great difficulty surviving if the executive moves to a different role or organization.

The upper-level management position should not be used to dictate behavior. The role of Corporate Angel is similar to Senge's “Executive Leader,” who is a protector, mentor, and thinking partner. [Senge96] The role is not an authoritarian one.

Be sure your interests and the plans of the Local Sponsor are aligned with that of the Corporate Angel to avoid competition and limit confusion.

To keep the Corporate Angel interested, Stay in Touch and offer the chance for a Royal Audience when an appropriate Big Jolt visitor is planned.

This pattern “builds” high-level management support for the innovation in the organization. The whole process of introducing the innovation is easier since lower-level managers and others in the organization are usually open to directives from the top. When high-level management helps to align the innovation with the business goals, its place in the organization becomes more established.

The risk is that high-level support can give the impression that the innovation is being dictated and is simply just another buzzword that is being rolled in. Don't be in a hurry to establish this level of support. It may be better to work on growing "grass roots" interest first.

Coplien's Patron pattern [Coplien95] describes the role of a high-level manager who is a development project champion and decision-maker.

The Corporate Angel at one company was the vice-president of product development. He was a consistent supporter of all patterns activities. His influence made it easier to bring in trainers and consultants, buy books, and attend conferences.

One Corporate Angel had a special interest in patterns and has worked to develop one of the standards as well as setting organization-wide goals.

To move from Level 1 to Level 2 CMM, one company reports that the most important success factor was senior level sponsorship. This set the expectations for Level 2 compliance and business goals for the entire organization, and held the process group and the management team accountable for achieving results. [Lowe96]

Originator: Linda Rising

Dedicated Champion

My primary job in the organization is to introduce patterns and build a patterns repository. Because of this, I have time to do things like talk with people individually [Personal Touch], arrange special events [Hometown Story, Big Jolt], keep the ideas visible [e-Forum, In Your Space], and have regular conversations about what is going on [Stay in Touch] with my manager [Local Sponsor]. In other words, the biggest and most important resource I've been given is time.

To increase your effectiveness in introducing your new idea, make the work part of your job description.

You're an Evangelist who has successfully enlisted a Local Sponsor or Corporate Angel.

You need more time to devote to introducing your new idea into your organization.

Without the pro-active effort of someone whose job description includes championing the new idea, it can wither and die on the vine. A single, dedicated individual can bring a focus to the activities necessary to maintain a sufficient level of interest that will keep the idea alive. You will become 'dedicated' if you have: (1) devotion to the cause and (2) time dedicated to the task of 'championing' the new idea.

An Evangelist doesn't usually have enough time to do this. To get this time, the change effort needs to be recognized as part of the person's job.

Therefore:

Ask for Help from a Local Sponsor to expand your role of Evangelist to one of Dedicated Champion.

Make a case for including the change initiative as part of your job description. Some Local Supporters are interested in metrics. Track the number of Brown Bags, the number and names of attendees, and the people who sign up for the e-Forum. If you have any findings, objective or subjective from your own experience [Just Do It] or the experience of others [Hometown Story], this is also convincing information. The support of a Respected Techie is convincing, especially if it is someone your Local Supporter has worked with. A Guru Review can be scheduled with nominations from the Local Supporters in your area.

External Validation can also be convincing, especially if the publications are in the domain the manager cares about or business-related books and articles. News about a competitor can make a big difference here! A Big Jolt visitor can help if he spends time in a Royal Audience to address the manager's concerns.

You can start with a small percentage of your time and later argue for expanding it if there are business reasons that will be compelling to your manager.

When you become the Dedicated Champion, keep your enthusiasm and don't neglect any of your current Evangelist activities. Even if you are hired as a Dedicated Champion, you must still take on the role of an Evangelist.

Realize that you do not own the success of the new idea. Too often, a Dedicated Champion, in his zeal to succeed, does all the transition work rather than facilitating and ensuring that others do their part. Involve Everyone and Ask for Help. If you are to achieve Sustained Momentum, others in the organization must see it as part of their responsibility. Measure success by how many transition tasks you encourage others to do. You must become comfortable with an emergence of the new idea within the organization, patient as teams struggle to find how the innovation helps them succeed, and secure enough to create opportunities for others to do their part. [Lindstrom02]

This pattern "builds" a role dedicated to leading the effort to introduce the innovation into the organization. The new idea is likely to grow in the organization because a person now has the time, and possibly other resources, to carry out the necessary tasks in the change effort.

However, the approval of this role may come with the expectation to succeed. If the success of the innovation is on your shoulders, it is therefore important for you to justify your time, track the results, and continually demonstrate the benefits. Metrics can be useful. If you note these as you go along, you will have them in your "back pocket" in case your boss wants data to justify your new position.

One Evangelist was able to convince her Local Sponsor that the patterns initiative was worth supporting. While patterns activity was never her full-time job, there was enough flexibility in her job description to accomplish a lot more than she would have been able to do on her own time.

A great deal of effort was used to get patterns going at one company. This would not have been possible without a Local Sponsor hiring and supporting a Dedicated Champion.

When I was TQM manager, we aligned the "improvement work" with the "daily work." The longer goal, of course, was for the distinctions to blur. The TQM manager had the skill and time to jump in and help a team complete an improvement project. However, if this action was overcoming a lack of time commitment from the team, then that intervention may have done more harm than good. The more

difficult challenge of the dedicated champion is to facilitate the teams to overcome their own obstacles. [Lindstrom02]

What allowed us to depart from our normal manner business? For us, the most important element ... was a successful champion who engendered interest in process change. A champion should be a respected developer who is part of the team, known for getting work done and respected for desiring practical improvements. [Roberts00]

Originator: Linda Rising

Early Adopter

“Visionaries are those rare breed of people who have the insight to match a [new idea] to a strategic opportunity, the temperament to translate that insight into a high-visibility project, and the charisma to get the rest of the organization to buy into that project.” They are the ones who can give your new idea its first break. Even though it is hard to plan for them, it’s even harder to plan without them. [Moore99]

Ask For Help from the opinion leaders in your organization.

You’re an Evangelist or Dedicated Champion trying to introduce a new idea into your organization. You have a small group of Innovators who support your new idea.

To create more impact for the new idea in an organization, interest must extend beyond the initial group of Innovators.

Innovators are helpful as “gatekeepers” for the innovation, but generally don’t make good opinion leaders because people are wary of their attitude toward risk. Innovators tend to be effective opinion leaders only in highly innovative organizations. In other organizations, you need the help of people who are more practical – those whose reputation for being sensible makes the rest of the organization look to them before adopting a new idea. The “early adopters” follow the Innovators on the normal curve of adopter categories. They are just ahead of the Early Majority in innovativeness and risk-taking. [Rogers95]

Early adopters are visionaries who care more about fundamental breakthroughs than simple improvements. Unlike the more enthusiastic Innovators who like an idea just because it’s new, early adopters consider the usefulness of the idea and attempt to match it to a business goal. [Moore99] As a result, they often have the respect of their peers and make good opinion leaders. This is the reason they are generally sought by change agents to help speed up the diffusion process. [Moore99, Rogers95]

Therefore:

Win the support of a group of people who can be opinion leaders for your new idea.

Look for people who are open to learning and have a reputation for successful use of new ideas. Give them as much information and training as possible to convince them of your idea. They are attracted by the Smell of Success. Use Personal Touch and Tailor Made and encourage them to look to Innovators for experiences with the innovation. You must use a down to earth approach and show the usefulness of the

innovation to the organization if they are going to be interested. Be flexible and willing to work with them as they try to realize the business value the idea offers.

Once they are convinced of the new idea, Ask for Help. Encourage them to talk with others, using Personal Touch or Adopt a Skeptic. Ask them to lead a Study Group or do a Hometown Story, after they gain some experience using the innovation. If you find an early adopter who is also a Respected Techie, he may be interested in being involved in a Guru Review to help convince management. Stay in Touch and include them in a Royal Audience. Remember to Just Say Thanks.

This pattern “builds” a group who can help serve as opinion leaders for your new idea in the organization. They will reduce the uncertainty that some, such as the Early Majority and skeptics, have about the new idea. They can also help win support from a Local Sponsor or Corporate Angel.

The support of a group of early adopters does not come for free. Unlike the Innovators who usually become excited after attending one event, you will have to convince early adopters that the new idea will help the organization. This takes time.

Soon after I started talking about software patterns in my organization, Carla took the initiative to read “The Patterns Handbook.” I took her for coffee one day to answer her questions about what patterns could offer the organization. She was hooked. Because her work and her opinions were respected in the organization, I asked her to talk with others about patterns. And when I planned an event, I always asked her opinion on the details.

The patterns movement at one company targeted the development community with the long-term goal of building a patterns repository to capture “best practices” in the organization. The folks who were involved in the pattern mining for the repository were the respected, down-to-earth developers who were open to new ideas, not those who were wildly enthusiastic just because it was a new thing.

Originator: David E. DeLano

Early Majority

Marketers of a high-tech product tell this story. In the first year of selling their product, the technology enthusiasts [Innovators] and some visionaries [Early Adopters] quickly jumped on board. During the second year, the company won over more visionaries and a handful of truly major deals. Sales appeared to be going so well that, in the third year, the company expanded its sales force, increased its advertising budget, opened new district offices, and strengthened customer support. But the sales were far less than expected and the growth in expenses was larger than the growth in revenue. What the company interpreted as a steadily emerging mainstream market was really an early market. The company failed to recognize that selling an idea to an early adopter is different from selling it to the early majority. [Moore99]

To create commitment to the new idea in the organization, you must convince the majority.

You’re an Evangelist or Dedicated Champion trying to introduce a new idea into your organization. You have the support of Innovators and Early Adopters.

The support of Innovators and Early Adopters will spark the new idea in the organization, but for it to truly have impact, you must convince the majority.

You begin to build the grassroots with Innovators who are gatekeepers and Early Adopters who are the early opinion leaders. But at some point you want to gain the support of the majority to allow the idea to thrive. The “early majority” represents about one-third of the population. Once this group is won over, they are loyal and will often enforce organizational standards to help the innovation succeed.

The early majority are much more deliberate in their decision-making. Before they commit to a new idea, they want to know how others have succeeded with it. They would like it to work properly and integrate well with the way things are currently done. Risk is viewed as a waste of time and money rather than a chance for opportunity or excitement. [Moore99, Rogers95] Unlike Innovators, the early majority adopts too late to take on the role of gatekeeper for the new idea. Unlike Early Adopters, they are followers and generally do not hold positions of opinion leadership. Yet, they provide the link between people that adopt early and those who are relatively late. This is the link that bridges the gap or “chasm” between the majority and the early adopters. You must cross this chasm to get a new idea into the mainstream and achieve Sustained Momentum. [Moore99]

Therefore:

Expand the group that has adopted the new idea rapidly to include the more deliberate majority that will allow the new idea to gain a strong foothold in your organization.

Look for individuals who are practical and want incremental, measurable, predictable progress. Show them the visible improvements that can be obtained with the innovation. Demonstrate some results with Just Do It. Connect them with Early Adopters and other peers who have already adopted the innovation. Encourage them to attend a Hometown Story. Use Personal Touch to show them that the risk is low while the value to their immediate needs is great.

Once they are convinced, Ask for Help. Encourage them to talk with their peers about the innovation. Since they are the link to the later majority, ask them to Adopt a Skeptic to connect with individuals who are more conservative than they are. Remember to Just Say Thanks.

This pattern “builds” a grass roots majority for a new idea in the organization. Acceptance by the early majority defines the tipping point for the innovation. Gaining their support will accelerate the introduction of the new idea in the organization because the chasm has been crossed and the innovation is in the mainstream. In addition, unlike Innovators who usually move from one new idea to the next and Early Adopters who often see themselves on the fast track, the early majority can offer stability and long-term commitment. [Moore99]

The risk is that you can become frustrated with this group because they can be hard to reach by simply talking with them. Be patient. You must first have some successes to show before you can begin to convince them.

A faculty member in a neighboring department stopped by my office for advice on a proposal he submitted for creating a new undergraduate major. He explained that he had been encouraged by the initial enthusiasm from some members of his department. So he moved forward with the planning and thought that the other members would eventually become convinced that it was a good thing to do. But

this did not happen. The majority of the department was not behind him. I suggested that these people needed more assurance that his idea was not risky. He talked with each individual about the advantages the new major would offer the department and provided some evidence that it would not take large amounts of resources away from other projects [Corridor Politics]. It wasn't an overnight process, but eventually the majority agreed that he should move forward with the planning.

How do you know that you have a patterns culture? I think I knew that we had passed a significant point when a high-level manager stopped by late one evening. He sat down heavily and began to talk about some problems he was having and then asked, "So, can you think of any patterns to help me?" This was a manager of a large legacy system. Patterns had never been "pitched" to his department and although anyone could take the patterns training, most of the interest came from the new OO projects. If this manager was asking for patterns, clearly the majority was being won over.

Originator: Mary Lynn Manns

Evangelist

How I'd thought it worked was, if you were great, like Martin Luther King Jr., you had a dream. Since I wasn't great, I figured I had no dream and the best I could do was follow someone else's. Now I believe it works like this: It's having the dream that makes you great. It's the dream that produces the greatness. It's the dream that draws others around us and attracts the resources it takes to accomplish the dream.
[Waugh01]

To begin to introduce the new idea into your organization, do everything you can to share your passion for it.

You're part of an organization that wants to stay abreast of innovation. You're excited about your new idea. Maybe you went to a conference, read an article or book and, as a result, started learning more. You believe your idea will have value for your organization and you want to spread the word.

You want to get a new idea going in your organization but you don't know where to start.

Ralph Waldo Emerson said, "Nothing great was ever achieved without enthusiasm," but it's hard to translate enthusiasm into action that has lasting impact. New ideas are always out there—more than we can handle. Even the best ideas still need to be sold. This depends on the enthusiasm of people who are the natural instigators of new ideas and new practices. [Senge+99] They are the ones who can grow an idea into real change for the organization.

Therefore:

To introduce a new idea into your organization, let your passion for this new idea drive you.

Invest yourself in your cause. In other words, the first person to convince is you. If you don't believe in your cause, it will be difficult to sell it to anyone else. This is not a role for the fainthearted. Look for possibilities in every situation; take advantage of even small opportunities to get your idea across.

Realize that you are not the expert in the new idea and shouldn't sell yourself that way or expect that you can play the expert role. A little humility goes a long way. You can be the local Maven but not a know-it-all. Also, you are not the idea. You're a person who has a good idea but other people can also share it. You don't lose anything if others become more knowledgeable about it or if others also become Evangelists.

Share your vision with others. Let them feel your enthusiasm. Tell your story—this is the driver for real change. Your story should convey your passion, excitement, and conviction and inspire others to feel the same way. It's a good idea to have a two-minute "Elevator Speech" targeted for different audiences, so you're ready when anyone asks you about your new idea.

Don't worry if you don't have an all-encompassing vision. Test the Waters with a simple plan of action. Then move Step by Step, letting each stage build on the previous one. [Senge+94] Take Time for Reflection and learn as you go. Get beyond a quick-fix mindset.

Give Brown Bags and try Plant the Seeds. Set up an e-Forum. If there is interest, start a Study Group. If you have a well-known contact who will come in to your organization at no cost, bring in a Big Jolt. Do Food at events when you can. Begin to identify Innovators and Connectors. Use Personal Touch. Always remember to Just Say Thanks.

Progress can be slow, so celebrate Small Successes, be prepared for setbacks, and realize that real change takes time.

Show that there's value in your new idea. Don't "preach"—any improvements should just radiate from you and from your work. Hopefully the rest will notice and inquire. [Edralin02]

If you are seen as an Innovator, people are less likely to trust what you have to say, since Innovators get excited about new things just because they are new. If you are seen as an Early Adopter, you are likely to be more effective in reaching the rest of the organization because of your reputation for being more down-to-earth in your decision-making.

Research suggests that if you are naturally likeable and attractive, your job will be easier because people are unconsciously more open to people they like. If you are introverted or opinionated, people are not likely to trust you, even if you've got the best data in the world. You must be a strong communicator, someone who can build personal credibility. [Alexander01, Cialdini01] The Introvert - Extrovert pattern suggests that you should learn to play the role of an extrovert, so that an observer believes you are extroverted, bold, and outgoing. You must recognize when this role is appropriate, gather your resources, and play the part. [Bergin]

Involve Everyone and Ask For Help. It's hard to be a Salesman **and** a Connector, **and** a Maven but all three roles are needed to lead a change initiative. [Gladwell00] Don't try to do it all. For example, a Respected Techie is a good candidate for a Maven. Encourage others to be Evangelists in their own teams. Be on the lookout for possible managerial support. Real impact will require a Local Sponsor and a Corporate Angel.

Keep your determination in the face of resistance. Use Fear Less to get skeptics involved in the effort.

Look for the positive side in each person you are talking to. If you have a deterministic view of people—that they come programmed by their genes, there's only a 10% margin of improvement and 20% of them will screw you if they get a chance—then that belief in itself will severely limit your ability to lead profound change. On the other hand, if you love people, and if you believe there's an enormous reservoir

of untapped potential in each person then you want to help them be all they can be. If you can bring that attitude to your work, and if you can muster the courage and compassion to act upon that love, then you can be effective. [Senge+99]

Your goal is to earn credibility. Others may not always agree with you but they need to trust what you say. This is the most important part of being a change agent. [Hill02] Once you've earned credibility, you're in a good position to become a Dedicated Champion.

This pattern "builds" a role for an initial enthusiastic introduction of a new idea. It gets the new idea going in the organization and sparks some support from Innovators and possibly some interest among management.

The risk is that you can become too passionate about the new idea and turn off some people. Maintain the enthusiasm, but don't get carried away. Keep in mind that most others have to be convinced before they will feel the same enthusiasm you do.

Several years ago, I set out on a crusade. Management declared me a missionary and commanded me to go forth and convert everyone in our organization. I was preaching the need to embrace the concept of productivity in the form of an automated software tool called Excelerator. As far as I can tell, management selected me because I was a true believer; in other words, I was the first convert. [Bouldin89]

The patterns movement at one company began with an Evangelist who talked to everyone about patterns and gave Brown Bags. A small group of Innovators supported this early effort and helped identify others who might be interested. An e-Forum was established. A Local Sponsor helped identify a Corporate Angel.

One Evangelist for patterns was thrilled when so many people attended the first patterns event in the organization. She attributed the high attendance to the way she advertised the event, but a colleague suggested that people attended because the Evangelist was a likeable person.

A manager at one company notes: "The important thing about new product development is that the 'champion' of a new product develops a passion for that product, and inspires passion in others. It's like a new business venture. People who have a passion for something find the time to work on it, at lunch time, before or after work, weekends, whenever."

As I look back on the beginning of the patterns activity, I can see that I did a lot of things unconsciously, in other words, I was lucky! I was naturally enthusiastic about patterns. I wanted to share this information with others. I tried to think of ways of getting the message across. I didn't do all this because I understood how to get things going. I did it because that's the way I was.

Originator: Linda Rising

Innovator

Some people know when you're back from a conference and drop by to see what new books you've bought or new techniques you've seen. They wanted to be there but couldn't take the time. Their need to be in on the "latest and greatest" is almost physical. I always tried to have something special for these

guys. They were happy to get anything and it made me feel a little less guilty because I was able to go. I think this is what my boss meant, when he said, “Sure, you can go to OOPSLA, but bring something back for the team!” He was thinking about these guys.

When you begin the change initiative, Ask for Help from colleagues who like new ideas.

You’re a new Evangelist or Dedicated Champion just starting to introduce a new idea into your organization.

You need people to jumpstart the new idea in your organization.

You can’t interest everyone in a new idea all at once. But you need to start somewhere. A community, of even a few people, who share your interest and want to work together, will make a world of difference in the confusion and inconsistencies that invariably arise in organization wide movements. [Senge90]

Virtually every significant change initiative starts with a genuine partnership among a small number of deeply committed individuals, often as few as two or three. [Senge+99]

It is easiest to begin with those people who will be most receptive to the new idea. “Innovators” are the small percentage of the population that get intrigued and excited about something just because it is new. They don’t need much convincing, only a little information. They enjoy trying to figure out how the latest thing works. This puts them in a good position to help launch the new idea into the organization.

Therefore:

Find the people who are quick to adopt new ideas. Talk to them about the innovation and enlist their help in sparking an interest for it in the organization.

Look for innovators among the first to attend Brown Bags and other meetings where new ideas are being introduced. Some of them will come to you once you start talking about the new idea around the organization.

Ask For Help by encouraging these individuals to take on the role of “gatekeepers.” [Rogers95] Invite them to Test the Waters by doing an early evaluation with Just Do It. Listen to their suggestions for appealing to the larger community. Because they are the first to come on board with a new idea, invite them to lead one of the first Study Groups for other people who are curious about learning more. Solicit their help in setting up In Your Space and an e-Forum.

This pattern “builds” support from a group who can help get a new idea going in the organization. It doesn’t take a lot of work to interest them and then you won’t feel so alone. Since they are willing to accept some of the uncertainty that comes with a new idea, they ease the risk for later adopters. Those who are especially enthusiastic may become Evangelists in their own groups.

However, you may not be able to depend on them in the long term. Their interest in new ideas makes them move from one thing to another. In addition, their willingness to accept risk causes others to be suspicious their claims. Therefore, they generally aren’t good opinion leaders. [Rogers95] Count on their help as gatekeepers in the short term. If they offer more, consider it to be a bonus.

Our patterns community began with Brown Bags that were attended by a small group of Innovators and Early Adopters. These people were invaluable to the Evangelist, since many of them had been with the company for a number of years and could offer suggestions about reaching others in the organization.

Bill's eyebrows seem to rise to his hair line when he hears about something new. So he was one of the first people I talked with about patterns. He tried some patterns in his code, reported the results, and helped me plan a few patterns events. His enthusiasm was just what I needed to keep me going in the early days of trying to convince others whose eyebrows did not rise as quickly.

Originator: Linda Rising

Local Sponsor

I had three managers who were the backbone of all the patterns activity at my company. Yes, I did the legwork. Yes, I wrote the articles. Yes, I devoted my time. But it was the encouragement, the unflagging support of these managers, and their belief in me that made it happen.

Ask for Help from first-line management. When your boss supports the tasks you are doing to introduce the new idea, you can be even more effective.

You're an Evangelist, trying to introduce a new idea into your organization.

You need attention and resources for the new idea.

Management support legitimizes things in the workplace. It's hard to get some people involved in a new idea unless they think their manager is behind it.

“One of the most important things is the notion of sponsorship.” There must be management who believes that the change needs to happen, who understands the decisions that need to be made and has the power to allocate the resources that will be needed during the transition. [Hildebrand96] Site leadership is critical. Experience suggests that an innovation will have broad impact in those cases where local management takes responsibility for committing to it. [Korson96]

We have seen no examples where significant progress has been made without first-line management and many examples where sincerely committed Corporate Angels alone have failed to generate any significant momentum. Managers have significant business responsibility and 'bottom-line' focus. They head organizational units that are large enough to be meaningful microcosms of the larger organization, and yet they have enough autonomy to undertake meaningful change independent of the larger organization. [Senge96]

Therefore:

Find a first-line manager to support your new idea, ideally, your immediate supervisor or boss.

Use Tailor Made to help the manager understand how the new idea can help the organization. Offer to organize a Guru Review. Personally invite managers to attend events such as a Brown Bag or Hometown

Story. If a Big Jolt visit is planned, offer the chance for a Royal Audience. Address any concerns with Whisper in the General's Ear, Stay in Touch; keep the manager informed on a periodic basis.

Managers will focus on business results and commit resources to efforts that can show results. Their part in the change initiative should be one of support. A manager may play the role in Coplien's Fire Walls (keep pests away) or Patron (project champion and high-level decision-maker). [Coplien95]

If you are able to enlist the support of your manager, Ask For Help in becoming a Dedicated Champion. These first-line managers may also be your best hope for capturing the attention of a Corporate Angel.

Sponsorship does not necessarily come from just one person. Try to build sponsorship among all the people who have the power to kill projects. [Hildebrand96]

This pattern “builds” first-line managerial support for your work in introducing a new idea. With this, you can get resources for the change initiative and capture the interest of those who look to management for guidance. You may even be able to become a Dedicated Champion.

But the wrong kind of sponsor can cause you to lose other people. Any time you bring in management, you run the risk they will push things in a direction that is different from yours. An overpowering one can even steal your ideas and take the credit. A manager that is overzealous can give the damaging impression that the new idea is being mandated. Look for respected sponsors that will help, not hurt, your good intentions.

Two managers have supported the patterns activities and the work of a Dedicated Champion in one organization. One manager was instrumental in opening the door to the Corporate Angel.

At another organization, the pattern effort would not have been started without the budget from the Local Sponsor to support the Dedicated Champion.

In one small organization, the Corporate Angel was also the Local Sponsor and the Dedicated Champion and was even involved with project implementation.

Originator: Linda Rising

Mentor

We held a three-day pilot patterns training. Everyone in the class thought there was too much material. They felt overwhelmed by the number of patterns. One suggestion in the evaluations was some help in actual use of the patterns. We expanded the three days to a week: Monday training, Tuesday-Friday half-day training and half-day mentoring. The half-day mentoring was consulting on real projects. It made a tremendous difference in the effectiveness of the training.

When a project wants to get started with the new idea, have someone around who understands it and can help the team.

You're a Dedicated Champion, trying to introduce a new idea into your organization. A project is interested in the innovation but some/all of the team members are unfamiliar with it.

People want to use the new idea on their project but don't know how to begin.

If team members are willing to introduce the new idea into their project, they can study it on their own to some extent. However, they probably need help to apply it effectively. The team is likely to make more progress if it has access to an expert who can guide them through their problems. Mentors can prevent small mistakes from growing into huge delays. [Hohmann97]

Beginners need to understand what experts do. Apprenticeship learning is ideal because it gives beginners access to an expert's "cognitive library." [Guzdial93] This is better than any help system or documentation. [Hohmann97]

Therefore:

Find an outside or internal consultant or trainer to provide mentoring and feedback while project members are working with the innovation.

The mentor should use a hands-on approach, work side-by-side with the team members, and let them know that he has struggled with the same problems. This will help open their minds to the innovation. [Letourneau00] He should introduce complicated topics carefully using Just Enough and use a Personal Touch to help each team member understand how the innovation can be useful.

Check the credentials of a potential mentor. Don't simply trust what anyone claims to be able to do. Ideally, the mentor should have experience in using the innovation and should know something about the team's problem domain.

In addition to the appropriate skills, look for a mentor whose personality will mesh with the team. But it may be impossible to find one person that everyone will like and relate to. If the mentor manages to alienate some team members and turn them off from using the innovation, you may need to bring in other types of personalities for these people to work with.

Make certain you are clear about what the mentor should do. Clearly state why you are hiring him and define the deliverables. Ask the mentor to help outline the specific goals for the educational experience the team members will have. [Hohmann97]

Don't allow a team to become dependent on the mentor. Otherwise, they may not want to let him go or will call on him for every little thing. Ask the mentor when and how he plans to leave his role. The best mentors strive to work themselves out of a job. [Hohmann97] You may need to set a period of time that the mentor will be available and then, at some point, encourage the team members to move forward on their own.

The organization may wish to use a mentor to train the entire team together to prepare for the project, as described in Don Olson's pattern, TrainHardFightEasy. [Olson98] The benefit lies in the shared experience of training together as a team, which not only enables the team to communicate effectively about the innovation but also serves as a team building exercise.

This pattern "builds" an understanding of the innovation while people are trying to use it. Individuals will have an easier time using the innovation because they will have an experienced person around to get them

over the hurdles. This helps to create a good impression of the innovation and increases the likelihood that people will be willing to adopt it.

A mentor is not always easy to find. The number of experts is usually small compared with the number of projects. In addition, the experts don't always know the project's problem domain or have the time to understand it. In these cases, it may be better to use another form of training for the team.

At our company, patterns training was available to anyone in the company. In some training classes, the instructor worked as a consultant with teams who were taking the class together. This combination of classroom instructor and hands-on mentoring was very effective.

Several organizations I worked with initially staffed a project with people who had no real understanding of object technology. As a result, their pilot showed that objects would not work in their environment. I have seen similar things happen with patterns. I still recommend proof of concept starter projects as a training experience but always recommend having an external expert jumpstart the efforts.

[Goldfedder01]

Jim Coplien says that "the use of pattern mentors in an organization can speed the acceptance of patterns and can help provide a balance between encouraging good design practices based on patterns and discouraging overly high expectations of designs based on patterns. [Beck+96] Initially mentors can help developers recognize the patterns that they already use in their application domain and show how they could be reused in subsequent projects. Mentors should also watch that the wrong patterns are not applied to a problem (i.e. people tend to reuse things that they know and the same temptation will apply to patterns, regardless of whether the pattern actually fits the problem)." [Anderson94]

I worked for a large defense sub-contractor back in the early 80s. We were learning Ada and object-based design from a group of consultants. The owner of the consulting firm had hired people who used very different approaches. I thought it was just a curiosity at the time, but now I see that this consultant-owner was very wise. He knew that different people learn differently and that what would work with one person might not work with another. His team included: Gary the Nice (everyone liked Gary, but as I look back on it, I think if he had been the only mentor he wouldn't have been as effective, as it was he balanced the others); Ed the Barbarian (Ed was the owner and knew a lot but he could be a little over the top for some); Johan the Master (he also knew a lot but he was more subtle and more laid back, a "slow reveal"); Brad (just Brad, plain spoken, good guy to work with). This way, we could all find someone we felt comfortable with and it provided the best way to learn the new approaches. They each brought their own take on the material to the table and hearing different views is always good.

Originator: Junichi Yamamoto

Respected Techie

After I gave the first Brown Bag on patterns, one of the attendees said, "This is good stuff but no one knows you. You should talk to Jeff or Randy. If they like it, then others will follow." I immediately went to see these senior programmers and sure enough, at the next Brown Bag, attendance doubled and most of the newcomers said, "Jeff (or Randy) said I should hear about this." I was grateful for the help!

Enlist the support of senior-level people who are esteemed by members of the organization.

You're an Evangelist or Dedicated Champion trying to introduce a new idea into your organization.

People in an organization can be reluctant to show interest in a new idea unless it has captured the interest of colleagues they respect.

“Reputation is a fundamental aspect of social identity; it helps people know how to interpret each other’s words and actions and make decisions about who to trust.” [Kim00]

People are bombarded with information and are too busy to keep up with the latest and greatest. Many people depend on others to help evaluate new ideas. Usually these trusted advisors are senior-level people who are respected by everyone. When these people get behind an idea, it’s one of the strongest kinds of approval you can have.

Therefore:

Enlist the support of experienced, senior-level gurus who are respected by both managers and non-managers alike.

Approach the guru with humility. You’re there to learn from them, not educate them about every nuance of the innovation. Instead of hitting them over the head with your new idea, present it gradually, asking for the guru’s opinion about it. Instead of saying, “Wow! I was at this cool conference and I found this great new way of doing things. I’m so excited about it! I thought I’d have a meeting and tell the team,” try, “I’m sorry you didn’t get to go to the cool conference last week. You would have enjoyed seeing all the new stuff. I heard about this great new way of doing things and I wanted to see what you thought of it before I run off the mouth telling anyone.”

Research has shown that engineers are fearful of being labeled an expert in an area if it keeps them from learning new things. They don’t want past knowledge to limit their potential for future growth. [Desouza03] You might approach the guru by saying, "I know you're the local database guru but I also know that you're interested in new things, so I thought you'd like to hear about this symposium I attended last week."

Take the guru out for coffee. Give your abbreviated spiel on the innovation [Just Enough] and then be prepared to listen. Someone with a great deal of experience has a lot to share. Use Personal Touch to show how the innovation can address any problems he mentions and Tailor Made to propose where the innovation would fit in the organization.

Give them the opportunity to be involved, if they find the innovation worthwhile, Ask for Help. Encourage them to talk with others and invite them to be part of a Guru Review.

If you’re new to the organization, ask around to find out who these gurus are. It helps if you know a high-level manager or another guru who can make an introduction.

This pattern “builds” people who can provide technical credibility for the new idea. If you can convince them that the innovation is a good idea, others will at least hear you out. Management, especially upper management, often depends on these respected individuals to provide an assessment of potential solutions. So once they are on your side, your battles are half over.

But these veterans can make or break you. If the person thinks the idea sounds like a “pile of garbage,” he is likely to share his feelings with others. Encourage him to fill the role of Champion Skeptic so that his resistance can make a constructive contribution.

It was hard to get the momentum going for patterns. I was new to the organization. I held some information sessions, such as Piggyback and a Big Jolt and talked with a lot of people [Personal Touch]. But the real break came when I convinced a respected technical person of the value in patterns. She was so excited that she talked it up among management and her fellow technical friends.

After an initial presentation had been made to the Corporate Angel and his staff, each manager at the meeting was asked to name a Respected Techie to be part of a Guru Review. They heard what patterns were all about and make recommendations back to the appropriate manager. The favorable outcome of this evaluation resulted in full management support, including that of the Corporate Angel, and an increased number of engineers who became part of the patterns community.

I was the Evangelist for the introduction of Java in our organization. The biggest worries were the fear of the new technology and worries about performance and scalability. The hardest person to convince was the head of the architecture group. He was a very active, vocal skeptic who had the ear of the VP. I tried to understand his objections and help him feel less threatened. Usually skeptics will be more open if you acknowledge and validate their expertise. This skeptic was convinced by: (1) the proof of concept and (2) subsequent discussion of how much more difficult it would be to implement the project in C++. After that he said Java was OK. [Hill02]

Originator: Linda Rising

References

[Alexander+77] Alexander, C.A. et al., *A Pattern Language*, Oxford University Press, 1977.

[Alexander79] Alexander, C.A., *The Timeless Way of Building*, Oxford University Press, 1979.

[Alexander01] Alexander, S., “The politics of value,” *Infoworld*, May 11, 2001.

[Anderson94] Anderson, B., “Toward an Architecture Handbook,” *OOPSLA Addendum to the Proceedings*, Washington, D.C., January 1994, ACM Press.

[Beck+96] Beck, K., J.O. Coplien, R. Crocker, L. Dominick, G. Meszaros, F. Paulisch, and J. Vlissides, “Industrial Experience with Design Patterns,” *Proc. 18th International Conference on Software Engineering*, Technische Universität, Berlin, Germany, 25 – 30 March 1996, 103-114.

[Bergin] <http://csis.pace.edu/~bergin/patterns/introvertExtrovert.html>

[Bouldin89] Bouldin, B.M., *Agents of Change*, Yourdon Press, 1989.

[Cialdini01] Cialdini, R.B., *Influence: Science and Practice*, Allyn and Bacon, 2001.

[Collins01] Collins, J. "From Good to Great," *Fast Company*, Oct. 2001, 90-104.

- [Coplien95] Coplien, J.O., "A Generative Development-Process Pattern Language," *Pattern Languages of Program Design*, J.O. Coplien and D.C. Schmidt, eds., Addison-Wesley, 1995, 183-237.
- [DeMarco01] DeMarco, T., *Slack: Getting Past Burnout, Busywork, and the Myth of Total Efficiency*, Broadway Books, 2001.
- [Desouza03] Desouza, K.C., Barriers to Effective Use of Knowledge Management Systems in Software Engineering, *CACM*, January 2003, 99-101.
- [Edralin02] Edralin, J., "Letters" in *IEEE Software*, May/June 2002, 11.
- [Gladwell00] Gladwell, M., *The Tipping Point*. Little, Brown and Company, 2000.
- [Goldfedder01] Goldfedder, B., *The Joy of Patterns*, Addison-Wesley, 2001.
- [Guzdial93] Guzdial, M., *Emile: Software-Realized Scaffolding for Science Learners Programming in Mixed Media*, PhD Thesis. Ann Arbor, MI: University of Michigan, 1993.
- [Hildebrand96] Hildebrand, C. "Our Own Worst Enemy," *CIO Magazine*, Nov. 1, 1996, http://www.cio.com/archive/110196/chan_content.html
- [Hill02] Hill, C., interview at OOPSLA'02, November 2002.
- [Hohmann97] Hohmann, L., *Journey of the Software Professional*, Prentice-Hall, 1997.
- [Kim00] Kim, A.J., *Community Building on the Web*, Peachpit Press, 2000.
- [Korson96] Korson, T. D. and V. K. Vaishnavi, *Object Technology Centers of Excellence*, Manning Publications Co., 1996.
- [Letourneau00] Letourneau, J., workshop contribution, ChiliPLoP'2000.
- [Lindstrom02] Lindstrom, L., personal communication, 2002.
- [Lowe96] Lowe, Douglas E., "A Rapid Design and Deployment Method for CMM Level 3," *1996 SEPG Conference*.
- [Moore99] Moore, G.A., *Crossing the Chasm*, HarperCollins Publishers, Inc., 1999.
- [Olson98] Olson, D., "TrainHardFightEasy," Rising, L. ed., *The Patterns Handbook*, Cambridge University Press, 1998, 145-147.
- [Roberts00] Roberts, L.J., "Join the Revolution," *Software Development*, November 2000, 68-70, <http://www.sdmagazine.com/articles/2000>.
- [Rogers95] Rogers, E.M., *Diffusion of Innovations*, 4th Edition, The Free Press, 1995.
- [Sagan87] Sagan, Carl, "The Burden of Skepticism," in Shermer, M., *Why People Believe Weird Things*, W.H. Freeman & Company, 1997.

[Senge90] Senge, P., *The Fifth Discipline*, Doubleday/Currency, 1990.

[Senge+94] Senge, P. et al, *The Fifth Discipline Fieldbook: Strategies and Tools for Building a Learning Organization*, Doubleday, 1994.

[Senge96] Senge, P., *The Leader of the Future*, Jossey-Bass, 1996.

[Senge+99] Senge, P., A. Kleiner, C. Roberts, R. Ross, G. Roth, B. Smith, *The Dance of Change: The Challenges to Sustaining Momentum in Learning Organizations*, Doubleday, 1999.

[Souder90] Souder, W.E., Nashar, A.S., Padmanabban, V., "A Guide to the Best Technology-Transfer Practices," *Technology Transfer*, Winter-Spring, 1990.

[Waugh01] Waugh, B. and M.S. Forrest, *Soul in the Computer*, Inner Ocean, 2001.