Managing Slowdown in Improvement Projects

Anna Börjesson Sandberg, *Ericsson*

Lars Mathiassen, *Georgia State University*

Key colleagues can hamper progress in improvement projects when they are late to meetings, delay responding to requests, or don't make decisions as required. Here's how to analyze slowdown behavior, increase commitment, and reinforce progress.

Process improvement projects depend on the active participation of managers and senior engineers.[1,2] At the telecom company Ericsson, change agents were frustrated that requests to participate in improvement projects often precipitated behavior from colleagues that hampered progress. However, rather than accepting slowdowns, the change agents started to ask why managers and senior engineers reacted this way even though Ericsson is highly committed to process improvement.[3]

Complex social, political, and psychological factors govern individual behavior. Personal commitment and personal effort, however, can easily impact improvement project success.[4,5] At Ericsson, change agents no longer accept slowdown behavior such as being late to meetings, delaying requests for information, or not making decisions. Instead, change agents analyze such reactions as important signals of our colleagues' commitment and effort.

Over a period of two-and-a-half years, we tracked reactions from managers and senior engineers when they were invited to participate in improvement projects. We identified four types of slowdown behavior: "don't show up," "answer late," "great, but not now," and "say nothing." We related each response to personal commitment and effort allocated to improvement, and this eventually led to ways in which change agents can manage slowdown to positively reinforce progress and results in improvement projects.

Improvement Projects at Ericsson

Ericsson is a global company developing state-of-the-art products for the telecom market. The term "operational excellence" has guided Ericsson since early 2005 to facilitate efficiency, quality, and productivity in everything it does. In particular, operational excellence has served to initiate, drive, and deploy successful process improvement projects. This effort has paid off. New ways of working that affect the whole development chain, such as visible requirements handling, daily build concepts, and test-driven development, contribute to both increased quality and shorter lead times.

The company highly values continuous improvement, so it constantly studies how to refine improvement projects. There is neither the time nor the money to wait longer than necessary to implement an agreed-upon improvement. Speed in improvement projects has therefore become a key performance indicator. With that backdrop, we analyzed nine improvement projects in one of Ericsson's Swedish design centers from 2005 to 2007 to understand how the behavior of managers and senior engineers affected progress. Although improvement projects often depend on these groups' active support, within Ericsson both groups have relatively high levels of autonomy in prioritizing

 0740-7459/08/$25.00 © 2008 IEEE

Table 1

Slowdown behavior in nine improvement projects

Project	Improvement area	Change effort	Slowdown behavior	Impact on progress
1	Training engineers in model-based development for a 400-employee project	Five part-time agents for six months	"Don't show up"	Engineers needing to learn new ways of working didn't attend training sessions, resulting in delayed implementation and improvement.
2	Monthly meetings for managing improvement in a 500-employee unit	Three part-time agents for 24 months	"Answer late"; "Don't show up"; "Great, but not now"; "Say nothing"	Decisions were postponed or taken with unconfirmed commitment, resulting in fewer actions to make the improvements happen.
3	Defining software architecture for a new product in a 150-employee unit	Four part-time agents for 18 months	"Say nothing"	Expected actions didn't happen, resulting in slower implementation of the software architecture.
4	Implementing an efficiency metrics scorecard in a 500-employee unit	Three part-time agents for nine months	"Answer late"; "Don't show up"; "Say nothing"	The scorecard was implemented late, with disagreement on data-collection routines.
5	Using a general template for formal reviews among 10 different development units	One part-time agent for nine months	"Answer late"; "Great, but not now"	The template was implemented after one year instead of two to three months as initially planned.
6	Training in product quality for all employees in a 500-employee unit	Four part-time agents for four months	"Don't show up"; "Say nothing"	There was no training for approximately 25 percent of the target group.
7	Implementing a requirements-handling tool in a 50-employee unit	Two part-time agents for six months	"Don't show up"; "Say nothing"	Employees had initial frustration and doubts.
8	Implementing a tool for describing processes in a 100-employee unit	Three part-time agents for nine months	"Answer late"; "Don't show up"; "Great, but not now"; "Say nothing"	The process description was delayed, compared to the initial plan, for approximately three months.
9	Continuously measuring process use for up to 12,000 R&D employees	Two part-time agents for 18 months	"Answer late"; "Don't show up"; "Great, but not now"; "Say nothing"	The target group changed between measurements, making it harder to benchmark the result. Also, fewer employees took part in surveys.

time and commitment. Table 1 summarizes the projects.

Understanding Slowdown

Watts Humphrey, generally acknowledged as the father of the software process improvement movement, has emphasized commitment and participation as key success factors for improvement projects.[1] The professional literature has embraced this idea. Dirk Stelzer and Werner Mellis report that commitment from and participation by managers and senior engineers was ranked the number-one success criteria in 97 percent of the cases considered.[6] Pekka Abrahamsson argues, however, that commitment has been adopted within the software engineering discipline as a generic term and that we need to better understand how to effectively manage commitment during implementation projects.[7]

Nelson Repenning describes the positive loop of reinforcement of innovations: Personal commitment positively impacts the effort allocated; the allocated effort in turn positively impacts results; results in turn reinforce personal commitment.[4] W. Edwards Deming, the quality guru, reminds us of these basic relationships when he argues that "support is not enough: action is required."[5] There are different definitions of commitment:[8] We focus on an individual's attachment and determination to reach the goal of an improvement project; we relate effort to the time, knowledge, and influence that an individual allocates to the project; and, we define results as any increase in organizational effectiveness attributed to the project.[4]

Figure 1 illustrates the framework we developed at Ericsson to make sense of slowdown behavior in improvement projects.

Responding to Slowdown

Our analysis of slowdown in the nine Ericsson projects (see Table 1) led to four types of behavior

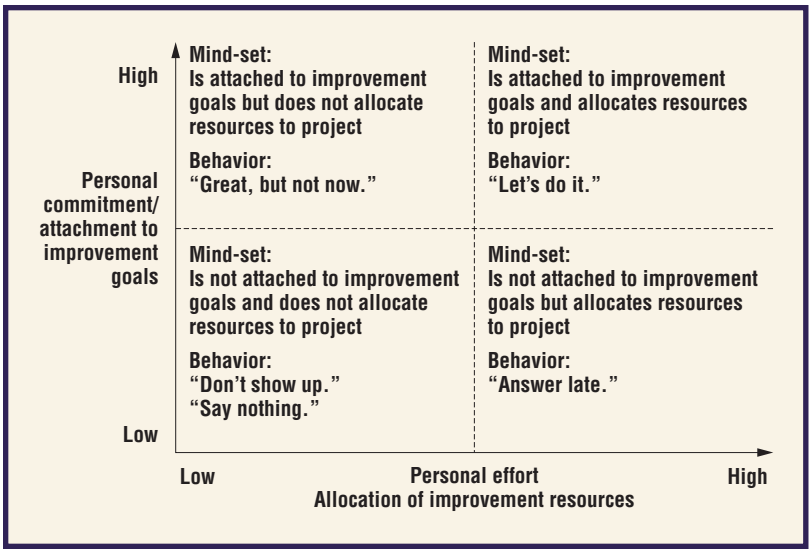

Figure 1. Understanding slowdown behavior. Along one dimension, we emphasize an individual's attachment to the improvement goals (personal commitment). Along the other dimension, we emphasize an individual's allocation of resources to the improvement project (personal effort). Change agents at Ericsson have started to use the framework to assess whether a person's commitment and effort are low or high related to a specific improvement project.

positioned into each quadrant of the framework in Figure 1. In Table 2 we describe these and the managerial responses we adopted to address them.

Manage Absence

The slowdown behavior "don't show up" is easy to detect when participants don't show up as agreed. A typical scenario at Ericsson goes as follows. As a workshop organizer, the change agent planned to make certain decisions during the workshop. However, John, a senior engineer, was missing when the workshop was about to begin. At that moment, the change agent could do nothing but start the workshop with the other participants. As the workshop developed, it became clear that the other participants were unwilling to make decisions without knowing John's position. The options were either no decision or a decision with low commitment, as John is a respected senior engineer and his colleagues didn't want to oppose him.

Not showing up and not communicating anything about his absence strongly indicate that John was unconvinced of the project's importance. When change agents challenged him, they also learned he was unwilling to take any action to improve. A change agent confronted with this situation can visit John's office to build a stronger personal commitment to join meetings. Another option is to measure and communicate attendance to the management team responsible for the project.[9] That creates management awareness and can lead to increased personal effort among the participants. However, the change agent must realize it will likely require extensive effort to bring John to a "let's do it" attitude. The change agent should therefore also consider whether a more committed person could be assigned to the project, especially if John continues his "don't show up" practice.

Across the nine projects considered, "don't show up" is the most common slowdown behavior among managers and senior engineers. In addition to creating frustration among change agents, it hampers progress. "Don't show up" responses are signs of shortcomings in the way an improvement project is organized and managed. When managers and senior engineers consistently respond in this way, it's time to fundamentally reconsider the improvement project, change its organization or direction, and even consider whether the project should be discontinued.

Manage Delays

A manager, Pete, exemplified the slowdown response "answer late." Pete believed improvements in the area were needed but not in the way the project had been set up. Pete would dedicate personal resources to improve the situation, but he wasn't convinced the improvement project was heading in the right direction. As a consequence, Pete gave late answers on requests to provide feedback, particularly on issues related to training attendance and engineer commitment to the new process. Also, when Pete eventually responded, his feedback was primarily negative.

For the change agent responsible for the improvement project, dealing with "answer late" responses is hard. Reactively, the change agent can try to make the best of the situation, await Pete's feedback, and adjust plans accordingly. Proactively, the change agent can visit Pete's office. She can ask for his views on the initiative, explain how his behavior affects the result, and encourage him to more actively engage in and contribute to the project. Basically, a change agent exposed to "answer late" responses must try to find ways to increase a person's attachment and determination to reach the improvement project's goals. That requires dialogue to appreciate that specific person's views, experiences, and improvement ideas. If such insights can be accommodated within the project, they will likely increase Pete's personal commitment and change his attitude toward "let's do it."

More than half of the nine improvement projects at Ericsson included "answer late" behavior. This common response is an expression of inappro-

Table 2

Slowdown behavior and managerial responses

Slowdown behavior	Description	Change-agent response
"Don't show up"	The participant doesn't show up at meetings and workshops. She might not even respond to your notice to attend, or she might respond positively but not show up.	Manage absence. Make a personal visit to the participant's office; she will then likely think twice before not showing up. Measure and report attendance to the management team responsible for the improvement project. Exchange the participant with a more committed one if needed. If the response pattern persists, consider reorganizing or discontinuing the project.
"Answer late"	The participant gives late and negative answers on requests to participate and commit to adopt the improvement. The late answer often prevents the change agent from influencing the answer in a more positive direction.	Manage delays. Make personal a visit and try to understand the participant's beliefs and ideas for improvement. Encourage the participant to actively influence the project, and negotiate how the project can accommodate his or her views. Actively prevent "answer late" responses by engaging key stakeholders in shaping the project early.
"Great, but not now"	The participant is generally positive toward the improvement. He thinks it's a good idea, but neither he nor his department can use the results right now.	Manage refusal. Be curious and always ask, "Why not?" Ask for potential barriers and try to provide solutions. Watch out for repetitive behavior indicating, "Great, but I will never use it." Ensure commitment to adopt project results as early as possible, and agree on an implementation timeline.
"Say nothing"	The participant says nothing. She doesn't intervene in discussions or share her views related to the project or general questions of interest.	Manage silence. Don't ever think a quiet participant is a committed participant. Always ask all involved in person about opinions, what actions they will be taking, and their general commitment. "Say nothing" responses are often from participants whose manager put them in the project. Explore options to have more committed participants join the project, and contact the involved manager.

priate alignment between the improvement project agenda and the preferences of the managers and senior engineers involved. In the end, insufficient communication and variations in interests across projects and departments within the organization create such situations. Skillful change agents will proactively reduce the misalignment risk by engaging key stakeholders at an early point in negotiation about the improvement project's goals and organization.

Manage Refusals

Basically, "great, but not now" behavior shows promise for an improvement project. For example, a senior engineer, Brian, was convinced of the project's importance but couldn't play an immediate key role by allocating any resources to adopt the results within his department. However, Brian showed an open attitude and contributed valuable experience and feedback to the project.

Change agents responsible for making an improvement need to commit not only to developing the improvement but also to implementing it. A good approach for the change agent is to discuss with Brian what barriers are interfering with his and his colleagues' use of the improvement and whether they need any help with a specific adjustment. It is important that the change agent explore what it would take to have Brian and his colleagues adopt the improvement immediately. That will provide useful insight that can help implement the improvement elsewhere, and might also bring Brian to a "let's do it" attitude. Alternatively, Brian's positive attitude toward the improvement could convince the change agent that delaying implementation is okay. But be aware, the "great, but not now" response can be politically motivated. Brian might know that "great, but not now" is a good way to delay challenging and time-consuming efforts to implement improvements. By being positive but unwilling to change, Brian might be seeking excuses to not adopt the improvement at all. So, the change agent must ensure Brian commits to a specific time to start using the improvement in practice.

Across the nine projects at Ericsson, we found that the "great, but not now" response often was used when the improvement project had several potential users. Although the "great, but not now" response in some cases expresses personal conviction that the improvement is really needed, managers and senior engineers also sometimes use the response to hide behind others. Early commitment to an implementation time line is a useful countermove that will reveal a more realistic picture of the level of commitment.

The change agent must never assume a quiet participant is fully committed to a project.

Manage Silence

The "say nothing" response is best identified by observing participants and spending time listening to their concerns and ideas. Quiet participants can, of course, have introverted personalities or need an appropriate break in conversation to express themselves, but in many cases, silence is a "say nothing" response to participation. In one workshop, Dave didn't open his mouth. He never entered a discussion or shared any opinions regarding the project.

The change agent must never assume that a quiet participant is pleased and committed. Instead, she must create space for Dave to share his views and test his commitment to the project. Dave must get a chance (or, if necessary, be forced) to express his position. In that way, Dave's "say nothing" response might change to a "great, but not now" response to avoid becoming seriously involved. The change agent must carefully follow up and possibly engage in discussions of future steps to implement the change.

Unfortunately, we encounter the "say nothing" response in all kinds of improvement projects at Ericsson because people are often forced to participate. They are there simply as department representatives. A person using the "say nothing" response doesn't believe in the improvement project, nor is he willing to allocate personal resources to support it. The change agent might consider exchanging Dave if possible and discussing this option directly with his manager. These people are hard to convert to a "let's do it" attitude.

Building Positive Reinforcement

We summarized this analysis of slowdown behavior of managers and senior engineers into important lessons for change agents. As a result, the following lessons were adopted at Ericsson to help build positive loops of reinforcement in improvement projects.

Make Personal Visits

Commitment always starts on an individual level.[1,7,10] Key managers and senior engineers carefully prioritize their time because they constantly have more to do than time allows. They have moved forward in their careers because their participation is considered important. A change agent can make personal visits to explain the consequence of their absence or late feedback, and to encourage them to contribute to an improvement project. It's of great value for the change agent to convince and encourage participants one by one. Making personal visits can improve both personal commitment and effort.

Be Curious

Curiosity is the best way for the change agent to respond to a "great, but not now" mindset among participants. The participant can become both involved and encouraged when the change agent says things such as "tell me more about your problems …" or "can I help you to …?" Polite curiosity can serve as a pleasant and energizing enabling mechanism that differs from the constant stream of demands and threats managers and senior engineers typically face. Most people like others to engage with them personally to show respect and willingness to help out with potential problems.

Ask and Follow Up

The change agent must never assume a quiet participant is fully committed to a project. She must make sure through asking and personal follow-up that the participant is not only participating in the project but also willing to support the improvement. Change agents need to ask and follow up repeatedly to secure and maintain commitment and active contributions from all participants.

Measure Attendance

Change agents should record attendance, partial attendance, notified absence, and unannounced absence, and then summarize these data in a table. In this way, the change agent gets a tool to communicate and explain how absence affects an improvement project.[9] Most people fully understand that progress is difficult without active contributions, and the change agent can therefore use data defensively to explain delays. A positive side effect of this approach is that measuring is likely to increase attendance by itself. The change agent might get rid of most "don't show up" behavior.

Draw Attention to Improper Behavior

There is no reason to accept improper behavior over a long period. Managers and senior engineers participating in an improvement project must take responsibility and contribute. The change agent should consider drawing attention to improper behavior if a participant is consistently late to meetings, does not respond to requests for information, or avoids making decisions. However, involving higher levels of management should not be done before making personal visits to address improper behavior.

Replace Participants

If the change agent identifies "don't show up" and "say nothing" responses, consider replacing

the participant. These responses are signals of low personal commitment and effort that might be difficult to change. Replacing participants isn't the first tactic a change agent should use, but after personal visits, follow-up activities, and escalations, it might prove necessary to find someone who is willing to spend time on the project.

Reconsider Project Design

Increased interaction with relevant managers and senior engineers provides the change agent with important information and inspiration. On the basis of these insights, the change agent might reconsider the design of an improvement project, in particular when facing consistent "don't show up" behavior. If possible, the project should be modified to better accommodate key participants' interests. In extreme cases, change agents should also consider temporarily stopping or even canceling the project when it's not aligned with current organizational realities.

Gerald Weinberg claims "organizations change one person at a time."[10] Accepting this fundamental condition for improvement projects, the challenge for change agents becomes knowing each participant's level of commitment and willingness to allocate resources to the project. Equipped with such insight, change agents can intervene to influence individual participants to build positive loops of reinforcement. Change agents should not expect they can make all participants adopt a "let's do it" attitude, but they can make more participants move in that direction to support progress in improvement projects. At Ericsson, we've found the framework and responses we described here useful as practical tools for change agents. As next steps, we're considering how to systematically evaluate and measure different slowdown behaviors and change-agent responses across projects and development contexts.

Acknowledgments

We appreciate the valuable comments from the anonymous reviewers of *IEEE Software*. A special thanks to the reviewers and to the editor, Stan Rifkin, who assisted with both valuable comments and references in the final phases. These comments and references helped us better explain and communicate our research.

About the Authors

Anna Börjesson Sandberg is a senior specialist in research and development at Ericsson in Gothenburg, Sweden. Her research interests include software process improvement, change management, and change agency. Sandberg received her PhD in applied IT from the IT University of Gothenburg, where she still is active doing research. She is a member of the IEEE and the ACM. Contact her at anna.sandberg@ericsson.com.

Lars Mathiassen is a professor of computer information systems at Georgia State University. His research interests include information systems and software engineering, with a business process innovation focus. Mathiassen received his PhD in informatics from Oslo University and his PhD in software engineering from Aalborg University. He's a member of the IEEE, the ACM, and the Association for Information Systems. Contact him at lmathiassen@gsu.edu.

References

1. W.S. Humphrey, *Managing the Software Process*, Addison-Wesley, 1989.
2. K.E. Wiegers, "Software Process Improvement: Eight Traps to Avoid," *CrossTalk: J. Defense Software Eng.*, Sept. 1998, pp. 9–12.
3. A. Börjesson and L. Mathiassen, "Successful Process Implementation," *IEEE Software*, vol. 21, no. 4, 2004, pp. 36–44.
4. N.P. Repenning, "A Simulation-Based Approach to Understanding the Dynamics of Innovation Implementation," *Organization Science*, vol. 13, no. 2, 2002, pp. 109–127.
5. W.E. Deming, *Out of the Crisis*, MIT Press, 2000.
6. D. Stelzer and W. Mellis, "Success Factors of Organizational Change in Software Process Improvement," *Software Process: Improvement and Practice*, vol. 4, 1998, pp. 227–250.
7. P. Abrahamsson, *The Role of Commitment in Software Process Improvement*, doctoral dissertation, Dept. Information Processing Science, Oulu Univ., 2002.
8. J. Myer and N. Allen, *Commitment in the Workplace: Theory, Research and Application*, Sage, 1997.
9. A. Börjesson, "Simple Indicators for Tracking Software Process Improvement Progress," *Software Process Improvement*, I. Richardson, P. Runeson, and R. Messnarz, eds., Springer, 2006, pp. 74–87.
10. G.M. Weinberg, *Becoming a Technical Leader: An Organic Problem-Solving Approach*, Dorset House, 1986.