Successful Method Introduction

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Every organization that attempts to introduce a new method, be it Structured or Object Oriented, faces a challenge in getting commitment from developers and management. Tools and education alone will not ensure success. The organization also needs to enthusiastically embrace the new method. Unfortunately, if an organization does not acquire the required enthusiasm, an investment in education and tools can be for naught.

This paper introduces the role of Introduction Agent as a member of an organization wishing to embrace a new software development method. A marketing and sales process is presented that the Introduction Agent executes to ensure a successful method introduction.

Biography: The author received a BS in Computer Science at the University of Nebraska at Omaha, followed by an MS in Computer Science at the University of Kansas. Prior to joining Cadre Technologies, he spent seven years at AT&T Bell Laboratories in software design and technology transfer. Included in the technology transfer are Structured and Object Oriented methods, expert systems and software metrics.

1. Introduction

As engineers, we like to make decisions based purely on logical reasoning. Most of the technical decisions we make are based on logical reasoning. However, most buying decisions are made based on emotion. There is nothing wrong with making emotional buying decisions. The multi-billion dollar advertising industry is founded on this fact. A person buys a product on emotion, then uses logical reasoning to defend the purchase to friends and family members (e.g., think back to the last car you purchased).

Mass markets have shown that emotional decisions are made over technical, logical reasoning (e.g., VHS vs. Beta videotape format, Windows 95 vs. OS/2 Warp, IBM PC vs. Macintosh). Successful marketing and sales campaigns explain these successes.

I have yet to see a method introduction failure because of a technological failing (given that the organization has met a number of qualifications). Yet I have seen a number of method introductions fail due to a lack of commitment on the part of an organization. To address the issue of gaining commitment of organizations, we will utilize techniques from the fields of sales and marketing. In our case, we are selling and marketing a new method, and the engineers and managers are paying for it with their commitment.

The person that has taken or is given the responsibility of method introduction, we will call the Introduction Agent. Structured Analysis, Structured Design, Information Engineering, Object Oriented Analysis, Recursive Design, or Object Modeling Technique (to name a few) are candidates for the method introduction.

2. Qualifications

Even if an organization commits to the introduction of a new method, undesirable results can occur by not meeting the following prerequisites.

NOTE: Although risky, some of the following items can be accomplished in parallel with a new method introduction. For example, if you run into problems defining the development process while trying to introduce a new method, process problems could be blamed on the new method, making your sales effort harder.

- **Technical Fit** - The method needs to generally fit the type of work performed by the organization. That is, if the organization develops embedded, real-time systems, a method that focuses on database management is not a good fit.

- **Development Process Model** - There needs to be a development process with ownership established. The process should be formalized, with inputs and outputs defined between process tasks. This will assure that the method will fit into a framework of development and be supported by a process infrastructure.

  The roles of the people following the process need to be determined. These include defining the boundaries between analysts, designers, coders, testers, and so on.

- **Available Tool and Training Budget** - If engineers are not going to be trained or have tools that support the new method, they will be very resistant to committing. Hopefully, your organization already has a standing training budget that can be tapped into for the new method.

- **Shepherding Personnel** - To work the issues of fitting the new method into a existing development process, and to serve as a method mentor, either someone within the organization, or an outside consultant should be considered.

- **Workstations** - I have seen a number of organizations use adoption of a new method as rationale needed to get new workstations to support a CASE tool. Unfortunately, this typically requires the new method to incur the workstation cost in the calculations for Return On Investment. This can cause problems if management commitment is needed.

3. Marketing Model

Marketing is concerned with the entire process of delivering a product to the marketplace. Sales is concerned with the activity involved with exchanging goods and services for payment. In our case, we will use a marketing plan focused on educating the entire organization, and use a sales plan to individual and smaller group commitments.

1. **Market Analysis** - During this phase, determine the cost and benefit, the immediate and future schedule impact, and the quality impact of adopting the new method. Jones and Card are good sources of data, if your organization does not have its own. You may also want to include case studies and benchmarking of other organizations. This information will be needed when selling to management.

   You will also need to gather information about how developers are currently spending their time in the organization. Try to estimate paid and unpaid overtime, second and third shift lab and debug time and time spent on weekends. This information will be needed when selling to engineers.

2. **Educate the Organization and Gather Acceptance Data** - Propose a number of one or two hour seminars that are open to the engineers. Continue to provide these seminars on a periodic basis, plus offer them to groups and departments that ask. An agenda for a presentation would include:

   - the history of the method,
   - the problems the method will address,
   - an overview of the method,
   - some other projects that have used the method,
   - the proposal for introduction.

   Make sure everyone knows what benefit the new method will have on the organization, and the individual engineer. Some people respond better to hearing what happens if the method is not used, so include that information also.

   You can take an opinion and satisfaction survey at the end of the seminar to understand how to improve the seminar in future offerings and as a metric for the commitment level toward the new method.

3. **Motivating the Organization** - This step involves selling of individuals and small groups within the organization to get commitment.

4. **Execute the Introduction** - Make the method one of the organizations standards. Integrate it with all the affected processes, including testing. Make certain that there is close support for the initial projects, creating champions along the way. Your follow-up, follow-through and service are essential for success.

4. The Sales Plan

The following steps are used to structure dialogue with one or more members of the prospective organization:

1. **Ask "Specifically, what problems do you see in the analysis and design processes?"** Make sure to hear them out and wait until they are done with their list.

2. **For each problem in step one, explain the effect the new method will have.**

3. **Ask "Do you see that the new method will improve the analysis and design processes?"** With this step you put the person in the position of selling the new method back to you. It is interesting that people want to do a good job when put into this position. You will even find very negative people providing a fair, evenhanded response to this question. If they feel that the new method will not improve the analysis and design process, understand and address their objections.

4. **Ask "What barriers do you see in adopting the new method?"** Address each barrier directly, or ask them what can be done to eliminate the barrier. After addressing all barriers, go back to step 3 to

reinforce that a commitment to the new method will improve the analysis and design processes. If there where no barriers, proceed to step 5.

5. **Get project or at least individual commitment**. For project commitment, set up a plan (with dates) for training and a kick off sessions.

5. Sales Techniques

The following techniques are useful when presenting to individuals or groups. These techniques are meant to help the listener become more excited and open to the possibilities you are presenting them.

Visualization Techniques - Sometimes you'll face an audience that is not excited about change, period. You can spot this type of audience a mile away. Many folded arms, slouching in the chairs, frowning faces. Taking one look at this group and your first instinct is to turn around and run out the door. But, fear not, there is a presentation technique that can help when the audience is not excited about much of anything.

Instead of bombarding your audience with declarations and statistics, fill them with images. For instance, instead of:

> "The purpose of analysis is to find errors early on in the process, instead of waiting to find them in testing."

Try:

> "Picture a Thanksgiving scene, where your spouse is busy cooking a turkey, the kids are playing in the rec. room, your folks are watching the big game in the front room. The house is warm and the smell of the feast fills your nose. The phone rings, and your spouse answers it. You are on the other end of that phone line, in a cold, fluorescent lit lab, telling your spouse that you just ran into another problem, due to poor requirements, and that you are going to miss dinner."

> "Don't you wish that you had found that bug at the beginning of the development?"

Yes Questions - Another technique that can ease a negative person or organization is to ask yes questions. Yes questions are simply questions that require a yes response (e.g., "Is it important for your organization to produce a high quality product?"). By asking a number of yes questions, you gain yes momentum, and a more agreeable group.

Expectation Setting - One goal of a new method introduction should be that it is a good experience for the organization, so that they will commit to other improvements on subsequent projects. Success with a method in an organization will be largely due to the expectations that are set early on in the process. If the expectations are set to high, then the next set of engineers that you need commitment from will not due so since your promises did not materialize. On the other hand, if the expectations are set too low, it may be hard to justify the change.

Under no circumstances should you imply that this one solution will solve all or most of the organizations problems. Using a method is one solution that takes care of a number of problems. Systems and software development is a complex business, and there is typically room for a number of solutions, each focusing on a specific set of problems.

I have seen organizations limit themselves to one solution, while saying that they do not believe in a silver bullet. These organizations had expectations that where unrealistically high, and perceived the method as failing after only the first project that used it.

6. Organization Taxonomy

Different organizations have different concerns, experiences and needs that must be addressed. The following attributes should help you classify your organization and provide guidance on how to address it's particular needs.

6.1 Position on the Adoption Curve
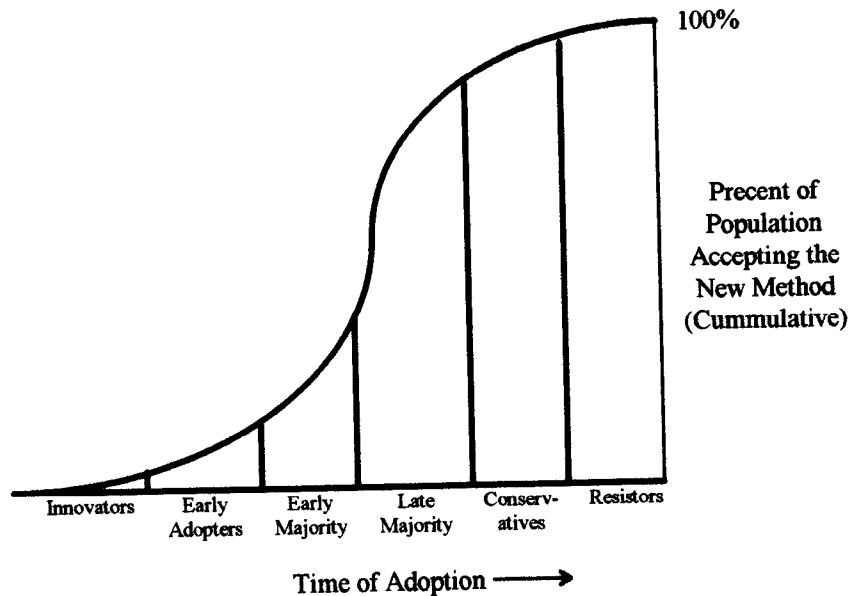
The technology adoption curve describes a population at any given time during the introduction of a new technology. Depending on where an organization is with respect to the innovation adoption curve, the approaches used in marketing the new method will be different.

Innovators are typically a group of engineers that constantly look at new technology. They may be a staff of researchers or a group charged with looking at new technologies or practices. Innovators are typically looking for something revolutionary and different. So, when presenting to Innovators, describe features of the method that are different from those in use today.

Early Adopters are typically software engineers in the line organization, that like to be associated with new innovations. Early adopters like to see what is new and different, but also want to know how it will fit in with the existing development process and how it will be managed. When presenting to this group, show the evolutionary and revolutionary aspects of the method, and where it has been used before. Show how the method fits (or will fit) into the existing process and how a project will be managed.

The Early Majority are those engineers most accepting of change given that there is a basis for it. They are heavily focused on their end product. They want to fully understand what current problems that the new method will solve. This group may start to focus on how they are different from other projects that have succeeded using the method. Acknowledge the differences, but stress the similarities.

The Late Majority, Conservatives and Resistors are less thrilled about change. They are motivated by visualization and what problems they will continue to have by not using the new method. Remind them of the problems they have seen and reported in the current process. Stress how the method will improve their work life, career, and life outside of work.

6.2 High Number of Unsuccessful Process Improvements

Some organizations are jaded by process improvement. Typically, they have been victims of a number of improvements where their expectations were not set correctly and the improvements fell short. These improvements may have worked correctly but are perceived as being unsuccessful, the improvement may not have been supported, or simply did not work. Whatever the reason, the only way to get past this stigma is to admit that the past improvements did not meet expectations and try to motivate the organization to keep trying.

Organizations need to become comfortable with the concepts of change and risk before seeing real improvement. Reinforce that there are no failures, just outcomes or results. It took Thomas Edison

10,000 trys before inventing the light bulb. When asked how he dealt with 9,999 failures, he responded that he had no failures, just 9,999 ways of not making a light bulb.

6.3 Improvements Never Before Attempted

Working with an organization that is just starting to specify their process and make improvements is a different type of challenge. You will not run into the ghosts of past failures, but there is a higher likelihood of the Silver Bullet problem. You will need to focus on the setting of expectations and position the method as one solution in a number that will be carried out during the journey of improvement.

6.4 Grass Roots Driven Adoption

It is encouraging to see engineers take charge of their development environment and make decisions about how to solve their problems. Although a grass roots commitment counts for much, management must also commit to supporting the new method before all introduction barriers are eliminated.

Juran described the language of management as the language of money. When presenting to an organization where the engineers are committed, but the management team is not, speak in terms of "faster, cheaper, better" and how this will provide a competitive advantage. Like with all of the sales and marketing activities, it is important to include the setting of expectations.

Unfortunately, poor expectation setting for management by an engineer Introduction Agent can end a discussion very quickly, as in the following scenario:

> Engineer walks into management meeting, presents a quick overview of the new method (since managers can't really understand anything technical :-)), and then presents a cost model that is too high, and a "coming up to speed" interval that is too long, and does not commit to an improvement in quality.

> The managers think about this for less than one second and respond with a definitive "We'll give it some consideration in next years budget." In other words, it will die on the back burner.

Remember that the cost model should be compared between total projects with and without the method. Likewise, the "coming up to speed" model should be compared to a project not using the method. It always takes a new group time to come up to speed on a new project. Determining the estimates, understanding the requirements, and building a common understanding, must be done whether or not a new method is used.

It is easiest to get support of managers if one manager serves as an angel. If you can get any individual manager to serve as a spokesperson to other managers, you will increase to probability of gaining the needed commitment from the management team.

6.5 Adoption by Management Edict

I have yet to see a method successfully introduced to an organization by the managers just ordering its use. The engineers in an organization need to be convinced, not forced, that a particular method solves their problems. It also helps if engineers perform the presentations, for the same reason that managers presenting to managers is more successful.

The focus should be on the benefit to the individual engineer. Remind them of an experience they would not want to relive. You should include in your presentation:

- which other companies in the area are using this method,
- the improved career and job security as a result of using the method
- and how using this method will improve their life outside of work.

7. Objection Handling

Handling objections is an important part of sales work. Typically, an objection is delivered in an emotional fashion. It is very important to respond very logically, thoughtfully and with integrity to the issue. Objection handling, if done poorly, will be the source of expectations set too high or too low.

A common error is answering a question before understanding it's meaning. You may <u>think</u> that you understand what is being asked, going off on a long rambling answer, only to find you have answered a different question. This may bring doubt into the minds of the audience members, resulting in you being shot down in flames. You need to understand their real objections. You may need to smoke them out.

Another problem is called "stretching." Someone challenges the method on a particular capability that is not within the normal bounds of the method. The response is that the method could indeed take care of that issue (with some tweaking here and there). These responses contribute to expectations that are too high, and a one solution (silver bullet) outlook. Let us look at an example:

> Questioner: "Will this screwdriver of yours pound in nails?"
>
> Agent: "Why yes, you can hold it by the shaft and use the handle to pound in nails."

There are all sorts of problems now:

1. If the organization needs to hammer a lot of nails, they will not like the screwdriver after they are finished. They will tell others in the organization that this is a real lousy screwdriver.
2. You are going to get the folks that really like hammers mad at you.
3. You have taken the first step toward replacing the entire toolbox with a screwdriver. You will probably start getting questions about how well your screwdriver drills holes.

Let us take another look at the example with a different response:

> Questioner: "Will this screwdriver of yours pound in nails?"
>
> Agent: "Is pounding in nails important to you?"
>
> Questioner: "Why yes, we spend half of our time pounding in nails."
>
> Agent: "Since pounding in nails is important to your business, you should consider buying a high quality hammer."

> or
>
> Questioner: "Will this screwdriver of yours pound in nails?"
>
> Agent: "Is pounding in nails important to you?"
>
> Questioner: "Well, every now and then we need to pound in a small nail into wallboard while we are in the middle of screwing in a large number of screws. It is too inconvenient to carry a hammer with us while performing this operation."
>
> Agent: "While the screwdriver was not designed to hammer in nails, and hammers are the proper tool for pounding nails, in a pinch, our screwdriver can be used to hammer in small nails into soft substances."

1. If the organization needs to hammer in a large number of nails, you have advised them to use a hammer. The ability of the screwdriver to pound in nails should not be a consideration when making a recommendation to other organizations after the project has finished.
2. The folks that really like hammers still like you.
3. You have not contributed to creating a silver bullet situation around the screwdriver.

8. Conclusion

The body of knowledge in the sales and marketing fields can be used in selling and marketing a method introduction to your organization. Educating your audience, preparing a marketing plan, and

following through with a service oriented sales plan, will better your odds of successfully introducing a method to your organization.

As in sales and marketing, it is not expected that you will get commitment from every person. Do not let this discourage you. Build on small successes and be persistent. Applying Edison's experience to method introduction you will at least understand how not to sell methods to your organization. This knowledge will be invaluable for selling other methods or technology transfer to your organization.

As a final note, to aid in your effort for introducing a method, Cadre's Field Sales force is available for presentations to engineers and management on the methods supported by Cadre's tools. Contact your friendly Cadre Systems Engineer for more information.

9. Acknowledgments

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