# An Approach to
# Postmorta, Postparta & Post Project Reviews

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**Abstract**
A Postpartum is an activity where people come together to review a previous project. The purpose from this review is to reflect and learn from the past project to help improve the team's process on future projects. For some projects and some people this can be quite a stressful event. It is an event, when executed poorly can do great damage. However, when done well, it can yield vast improvements in the team's process and productivity. This work shares what I have learned.

## 1.0 Introduction

It has been over ten years since I lead my first postmortem. It was a 2 day affair where we reviewed a two year long project -- to this day I can still remember the nervousness in the room.

Part of the nervousness was mine. I had convinced a group that it would be a good idea, and that I could help them do it. As I prepared for the event it became clear to me that I really didn't have the skills to help a group through controversy.

The rest of the nervousness came collectively from the team. Their greatest fear was that this review would turn into a "hunt for the guilty". In hind sight, I can imagine blame flying around the room as fast as various factions could think of counter arguments.

Fortunately, there was one person in the room who was quite skilled at managing a group's interactions -- keeping the discussion on important issues and at the same time assuring that everyone's participation was being honored.

*My first great lesson was: in a postmortem, we assume that everyone did the best job that they could, given what they knew at the time. We are not here to pass judgment on what happened but to learn and grow from our collective experience.*

During one of my recent software engineering methodology seminars, a question was asked about how to initiate continuous process improvement and the development of personalized maturity models. I suggested that a postpartum would be an excellent tool towards getting started.

I was stunned by the response: "Oh we have tried them and they didn't work. Several people came away pretty battered. A postmortem does more harm than good."

As I thought about the response more, I came to the conclusion that I needed to write about postmorta, and postparta. My goal is to share what I have learned; this is not intended to be a scholarly work but rather a practicum -- at this moment I can't imagine a source for publication.

**2.0 What to call it**

One of the first difficulties about writing about this topic is what to call it. There are a number of terms that could be used for this kind of post project review.

One name is *Postmortem*. It comes from Latin meaning "after death". As best I can tell, it was the first term used to review software projects at their end.

Several of my clients, schooled in Latin, object to the term suggesting that *postpartum* is the correct term to use, implying "after birth". They felt that a software effort is more like a birthing experience than a dying experience -- after all the goal is to create something new, to bring it into the world.

While some projects do deliver software, other projects die -- that is they do not produce anything. A review of failed projects, done well, is crucial to assure that the next effort does not repeat the past mistakes. So for a period of time I was okay with using both the terms postpartum and postmortem, but it left me with the responsibility to decide if a projects was a success or a failure. Eventually I decided all projects could be reframed into some from of success decided to only use the word postpartum.

I was comfortable using the word postpartum until I looked it up in my Microsoft Bookshelf 1994 - Dictionary and discovered something interesting: postmortem is a noun and postpartum is an adjective.

While the word postpartum seems more accurate to those who have studied Latin, it most certainly bothers those who have studied English grammar.

The next difficulty in settling on a name is knowing the plural form of Anglicized forms of Latin words. Postmorta is the plural of postmortem. I'd guess that postparta would be plural, if it were a noun.

One of my colleagues has started to call this a *post project review*. The problem I have with this is it seems to carry too much implied meaning and at the same time is wide open to each person's interpretation of the meaning of the term.

For this work, I will user the terms postpartum and postparta as nouns.

**3.0 Things to Consider**

A successful postpartum begins with planing. Here are a number of things that need to be considered.

**3.1 Purpose of the review**. When I'm first contacted to help a team perform a postpartum, I ask, "Why do you want to do a postpartum?" Usually, the question catches the caller off guard -- I get answers like:

"Because it was suggested during our last CMM audit,"

"Because it is part of our corporate ISO 9000 process,"

"Because we heard it was good to do," and

"Hey you are the supposed to be the expert. Don't you know?"

Yes, actually I know a number of reasons to perform a postpartum. Some of them are better reasons than listed above.

During the planing stage of a postpartum we need to get clear on what we want to get accomplished by holding a postpartum. Each organization has a different need, and until these goals are understood, we can't design a postpartum that will meet those needs.

**Philosophical Digression:** Over the ten years that I have led postparta, I have come to the conclusion that there is no one format that will fit all situations. Every postpartum is unique. It needs to be designed with the specific team, project and experiences in mind.

My plans include strategic goals of "what we want to get accomplished" as well as tactical plans of "how we are going to achieve the strategic goals". While planning is crucial, both strategic and tactical, I always experience situations where tactical portions of my plan are not a good fit, and in the moment I deviate from my tactical plan in order to achieve my strategic plan.

So there is no one form that will meet everyone's needs, but there are some common "choice points" that I reliably visit. At each of these points I ask the same questions about the postpartum. Of course the answers will be different and that is what makes each postpartum unique.

Throughout this manuscript, I will discuss my choice points -- the first choice point is understanding the goals of the postpartum.

Here are some good candidate goals:

*Capture effort data* - If this is an important goal, then we need to know how this information will be used:

to understand the existing process?
to improve the existing process?
to support or counter a particular agenda?
to provide history information to support future schedule efforts?
to identify training needs?
et cetera

Every project can contribute to the collective wisdom of an organization. The question is -- will the wisdom be captured, stored and used in the future. I usually help organizations develop a collective wisdom database. One of my former employers had collected data on 89 projects. This data bank was used to validate schedule estimates.

The review of effort data is useful if for no other reason than it causes people to think about the project.

*Get the story out* - At the end of any multi-person project, there were important things that occurred that are not widely known: positive and negative. In fact, no one know all the stories, how all the pieces came together. The story needs to come out in a forum where all can contribute to the story make room for new stories.

It is the telling of the story that removes the need for grumbling at the lunch table for months to come. It is a way to put into context, the situations that seem silly in isolation. It is a way to understand collectively what happened, and why.

*Improve upon the process, procedures, management and culture* - As we reflect on what has occurred, we see that there are things that we might be able to do differently and better next time around. Just as importantly, and often overlooked, we discover what we did well, and shouldn't forget. We can look as individuals, but when we look at we have done as a community, the learning is greater. We see the whole, not just the pieces that one person was involved with.

*Capture collective wisdom* - There are many firms that organize projects not around a long lived team but rather by building teams for each project. In these situations, the collective team wisdom acquired upon the last project is likely to be lost as individuals are scattered across the organization to support new projects. If at the end of a project, the collective wisdom is discussed and documented, it becomes something that can live beyond the team's life. Individuals may be able to carry with them lessons learned not just by the individual but also by the team.

*Repair damage to the team* - Giving birth to a new major piece of software is tough work. During the delivery, people are panicked and stressed. They behave in ways that are not characteristic for them. Sometimes things are said, or not said in the heat of the moment that need some mending. People put out extreme amounts of energy and make sacrifices beyond what is reasonable.

All of this adds up to be a deficit that needs to be balanced. If team interrelationships have been damaged, they need to be repaired. During the postpartum is an excellent time to begin repair.

It can be a time to feel the feelings, to acknowledge the damage and determine what needs to be done to repair it. It can be a time to honor the heroic efforts of individuals, often not recognized. It can be a time to play together and learn to enjoy, once again, being with the other members of the team. It can be a time to establish contracts aimed at preserving relationships in the future. It can launch the excitement of starting the next project.

This reason, repairing damage to the team, is often rejected because there is a work place rule" "it is not correct to deal with feeling in the work place." This is an archaic rule! All high performance teams that I have reviewed or participated with have developed a safe way to discuss what is going on for them, inside.

*Enjoy the accomplishment* - As software developers, we are goal oriented and problem solvers. We rarely stop to notice what we have accomplished. A postpartum is an opportunity to stop and reflect not on the problems, or the next problem but how far we have come.

Without such reflection, a "post project blues" can set in. Software developers may be exhausted because the previous project was difficult, and all they can see is another tough project ahead of them. Without a moment to savor the victory, it is easy enter the project with an imbalance focus on the difficulties from the past.

The post project blues feeling is also a component of "lost hope" that anything will be different next time. Building this hope is part of *Improve upon the process,...* goal.

Understanding the goals of a postpartum is necessary for the design of the postpartum as well as knowing at the end of the activity if it met its goals.

### 3.2 Facilitator's Skill and Knowledge

Another thing to consider in the design of a postpartum is the facilitator's skill at working with people, and how much they know about the work accomplished. Not everyone can lead a postpartum. Here are some criteria:

*Must be an outsider* - I believe that the facilitator needs to be an outsider -- not a member of the project. The facilitator needs to be neutral -- watching the process, causing people to participate and think as needed, summarizing points as the story lines begin to weave. I doubt most people could be neutral on a topic that has involved a significant portion of their life, and if they could, then they would rob the team of their participation and role throughout the project.

*Must be technical* - The facilitator needs to know something about the project. The more they know about what is to be reviewed the better they will be at leading discussion and helping the team towards a collective understanding. I include in this: the process, the architecture, the tools, the components, companion groups, suppliers, and so on. I believe that the facilitator needs to have software development experience.

*Must be a Betazoid* - The facilitator also needs people interaction skills. A postpartum involves leading people through a number of exercises; some designed to cause people to think, others designed to encourage group discussion. The facilitator needs to be able to deal with those who talk too much and those who don't talk enough. They need to be able to establish and maintain an environment where it is safe to speak out about unpleasant things, embarrassing things, and emotional things.

This facilitator needs to be skilled at resolving conflict and at mediation. He/She needs to be able to transform blame into constructive information and generally be able to sense the emotion of the team as the postpartum proceeds. In short, Deanna Troy (the Betazoid empathic counselor from Star Trek - the Second Generation) like skills are required for a facilitator of groups that fall more toward the dysfunctional side of the scale (See 3.3 Health of the Organization). People interaction skills can be learned. The author has several course suggestions for those who are interested.

If a facilitator does not have all the required knowledge and skills, then that doesn't mean they can't lead postparta. It just reduces the choices they have available for the design of a postpartum. At some point the choices may require the dropping of some of the goals, or building a team of facilitators with the necessary skills.

### 3.3 Health of the Organization

Another consideration in the design of a postpartum is how evolved is the culture in the area of human interactions. I watch how members of the team deal with difficult issues. Here is a list of characteristic behaviors I look at:

| **Dysfunctional Cultures** | **Functional Cultures** |
|---|---|
| Guarded language and secrets | Honest communication |
| Distrust of other groups | Alliance and cooperation with other groups |
| Well defined boundaries between groups; lots of discussion over whose responsibility it is; management driven | Boundaries are mutually discussed and agreed upon between groups; participants driven |
| Blame and lack of respect for other groups | Appreciates and uses the differences between groups |

| | |
|---|---|
| Skepticism of someone else's new idea or approach. Rewards for fighting someone else's idea. | Group refinement of an other's idea. Careful evaluation once experimentation with the idea has been performed. |
| Pressure to produce | Encouragement to improve |
| Behavior, process and activities highly influenced by past | Situations handled in the present with creative new solutions |
| Strong pressure to conform to the standard | Flexibility available for situations that are unique or new |
| Internal competition and survival are key issues; looking good is the way to progress | High quality results is the key issue; everyone looking good is the way to progress |
| Meetings are confrontive | Meetings are constructive |
| Engineers and managers feel powerless to change the organization | Engineers and managers believe they can change their organization |
| Decision making involves lots of debate, and the goal is to win the debate. Often the discussion centers around "the best way" to accomplish something. | Decision making is consensus driven, where "your idea is good enough" is combined with the author's responsibility to "make it work." |
| During decision making, proof of concept is required from colleagues; distrust of ideas and approaches is the foundation of the working relationship. | During decision making, respect for and trust of colleagues' skills is obvious. |

The greater the dysfunction, the fewer choices we have: either the facilitator needs to be quite skilled at dealing with people interactions and conflict, or the goals of the postpartum need to be reduced to avoid people interaction issues.

The bi-polar measure of dysfunctional and functional cultures neither bad nor good. It is simply a starting point for understanding where a culture is and to begin the dialog of how we can get better.

I do not recommend avoiding people interaction issues for dysfunctional cultures, as little lasting change will result from such a limited postpartum activity. Instead, I focus portions of the postpartum upon how we might become more functional.

When I'm dealing with a more dysfunctional team, I weave into the experience an appreciation of "The Four Freedoms of an Empowering Work Environment". In an empowering environment, everyone has the following freedoms:

- freedom to talk about the truth of a situation as you see it rather than what others want you to see,

- freedom to ask about puzzles,

- freedom to acknowledge and talk about what's coming up for you,

- freedom to talk about situations when you believe that you can't exercise the above freedoms.

I think each of these need a bit of explanation, however this is not the place. See the author's paper, "The Four Freedoms of an Empowering Software Development Environment" (Appendix A).

"Weaving into the design," mean teaching these freedoms, establishing them as ground rules for the postpartum, and then running the postpartum by them. I ask the team to help me figure out how we can claim these freedoms, at least for the length of the postpartum. It becomes one of the early exercises.

### 3.4 Who should attend

Another choice point involves who should attend the postpartum. In my early experiences, I included only the software developers. In particular, managers were excluded. The rationale was that software developers would be more likely to discuss problems with management if their managers were not in the room.

One of the goals of the postpartum was develop a report to managers recommending changes of various sorts. We worked hard on the report. Delivered it to the management staff, held briefings, and in many other ways tried to communicate what we learned about the project. The long term results of my early postparta were quite poor.

They were poor because the managers had no participation in their postpartum, they were not privy to all the discussions which lead up to the recommendations. Recommendations that involved a change in management style or procedure were easily forgotten in the middle stage of the next project.

I concluded that managers needed to be involved with their postpartum. Furthermore, since we were looking at the whole project, we needed to include key people from companion organizations involved in the development effort. Here is a check-list of candidate organizations who may know something interesting about how you developed your system:

- key customers
- marketing
- sales
- technical support
- technical publications

- customer support
- customer training
- quality assurance
- hardware development
- procurement
- manufacturing
- third-party vendors
- contractors

and one of the most often over-looked person, who has a unique view of the project, is the:

- department secretary.

I try to include as many view points as I can in a postpartum. This means increasing the cost of the postpartum, usually increasing the length of the postpartum, and requires a more skilled facilitator -- one who can deal with more people.

The largest postpartum I have handled as a lone facilitator was in the high 20's. Such a team was measured quite high on the functional side of organizational health. For larger postparta, or where the culture is less evolved, then I get more facilitators involved.

### 3.5 When to hold the postpartum

Another consideration involves selecting the right time to hold a postpartum. This I find most tricky, as most software projects slip. It makes no sense to hold a postpartum before the project has completed. Likewise it looses it's effectiveness as another project begins. I like to hold the postpartum 7 to 14 days after the completion of the project.

Once a project is done, people have personal things that they need to attend to, as well as a few issues that need organizing at work. They need some time to sleep and some time re-connect with their family and friends.

During this lull period, I give assignments which will help the developers get ready for the postpartum and helps me get prepared. I will discuss "getting prepared for a postpartum" later on in this manuscript.

As the facilitator, when I schedule a postpartum, I often expect the dates to slip. As my business is service oriented, I work hard to keep portions of my schedule open to accommodate slips. I also keep very close to the project towards the end so I can use my intuition to guess when the project is really likely to be done.

### 3.6 Selecting a location

With schedule slips likely, scheduling a location to hold the postpartum is difficult. As a result, we usually end up at "rustic" places that are not in high demand and which require a bit of travel. These actually turn out to be benefits.

Here is what I look for in a place to hold a postpartum. I need a room that will hold the entire team, and several breakout spaces, for small groups -- figure about one space for each 4 to 5 people involved.

I look for a place that requires at least a 2 hour drive, and some place that "has a parking problem." I want the team members to carpool. Driving together is a way for team members to talk and reestablish relationships, and possibly discuss the past project, the next project and the postpartum.

As the goals for the postpartum grow, as well as the number of team members, I like to hold "residential" postparta -- a few days away from the office, working together and reflecting yields a great deal more than using the same old conference room we have been all along.

A residential situation provides opportunities for team members to "play together" and repair damage. It communicates to the team members that this is an important and different activity.

The overall cost of residential when compared to the cost of people's time is not significant. Often higher level management will balk as residential because they suspect it will be a boondoggle. My experiences are quite the opposite. Always, I have seen developers and their peers work extra hard at off-sites -- often well into the night. I think the boondoggle concern says more about the upper manager's experiences at residential affairs than what might go on at a postpartum. I will argue forcefully, and upon occasion offer to let the upper manager to visit during some point in the postpartum to be certain that he/she is getting significant value for the money. The visiting of someone is a tricky affair, I manage it quite carefully.

The coming and going of people disturbs the postpartum process. One of the advantages of holding the meeting quite a ways away is to limit members' tendency to return to work or home for important stuff. Such coming and going hurt the effectiveness of the postpartum experience.

Usually, I am not the person who selects the postpartum site, it is usually a department secretary. Appendix B is a write-up I send directly to the secretary. I make a point to establish a voice connection with him/her and then follow up with a write-up on "Selecting a Place for a Postpartum."

### 3.7 Length of a postpartum

Some postpartum facilitators hold a postpartum in 2 hours, or in half a day. For small projects (say 2 - 4 people), where the culture is highly functional and evolved to the point where there is continuous process improvement, I'd say this might be reasonable. In such situations, discussion of what's going on in the project and how "we can improve upon it" is asked throughout the project. Thus, I'd expect long term change and improvement to

come from such a short postpartum, because it is quite similar to all other process review and improvement discussions.

However, for real lasting change to occur from larger efforts or when the culture is less evolved functionally, a longer time is needed. Over time I have settled on a 3 day format. I have the team arrive in the late morning, get settled in, do some exploring, have lunch and then we start working after lunch. We work through the second and third days, and try to be done in the middle afternoon of the third day. This will let the team members be home "not too late" on the third day.

Sometimes I find even three days tight, for all that needs to be discussed, but four days seems to be too long.

### 3.8 Choice point summary

In this section we have discussed a number of considerations or choices you have as you design a postpartum. The most important point in this section is that *every postpartum is unique*. As the creator of a postpartum, you need to think about all the issues we have discussed here as find a form that will fit the specific needs of the team, organization and project.

In the next section we discuss how to prepare a team for a postpartum, and the following section discusses how a particular postpartum might be executed.

## 4.0 Getting prepared for a postpartum

For the facilitator, a postpartum begins long before the meeting starts. Here are some things I do to get prepared.

### 4.1 Connect with the managers

In some cases, the management team is quite afraid of the postpartum, they see it as a review of their work. For others, it is an opportunity to discover something that they can do better. It might be seen as a loss of power and a threat to their power to lead. A few managers will believe that they know what needs to be done next and see the postpartum as a way to "get the troops" to buy into the obvious. And still other managers see this as a waste of time, but understand that it is politically wise to put on a show.

Because of these possible views of postparta, I try to connect with the managers. I usually have a phone conference call, and sometimes follow up with specific conversations with individuals.

I make some introductions, define what a postpartum is, and then chat briefly some of my experiences with postmorta and some of the results I have seen. I point out how I have helped my clients do a better job of managing.

Then I want to change the direction of information flow. I want to hear where the managers are at. I usually ask questions like:

"what would you like to get accomplished by having a postpartum?"
"what would a successful postpartum look like to you?"
"what would you like to have happen after the postpartum?"
"why are you asking me to lead this postpartum?"
"what are your greatest fears about this postpartum?"
"what topics need to be surfaced?"
"what topics do I need to be careful with?"
"tell me about the people I need to know about."

I then give an overview of how we might proceed, and invite them to suggest ideas as well. As a team, we refine to postpartum goals, and I remain responsible for the tactics.

One of the things we agree upon is that the managers will not participate much in the postpartum. Their main responsibility is to listen and provide insight as the software developers and others raise questions. We work out signals by which managers can communicate to me that they REALLY NEED TO COMMENT, and another sign for me to say back to them, PLEASE STOP TALKING.

We discuss the need for having "staff meetings" during the postpartum, where I can talk with them about where the postpartum is going, and if they have concerns.

I enlist them in introducing the idea of a postpartum to their people. I have three handouts for them to use as they present the idea, which brings us to the next topic.

### 4.2 Handouts and Pre-work

As a conscientious facilitator, there are several things I need to accomplish before the postpartum starts:

- the participants need to appreciate that a postpartum is a positive learning experience, not an session full of blame and counter blame;

- the participants need to have a minimum amount in trust that I will be able to lead this process, understand the nuances of the discussion, and provide a safe confidential source for verbalizing their truth; and

- the attendee's need to review the entire project. At the end of a project they remember the last few weeks but the earlier months are now vague at best. They need to review the entire project to be able to bring a complete perspective the postpartum;

I have developed three handouts to be used by the managers as they introduce the idea of holding a postpartum.

One describes a postpartum, sets the tone of "everyone did the best that they could at the time" and explains what the team needs to do to get ready for a postpartum (Appendix C). Each manager needs to put his/her own perspective on the postpartum, but it helps if

they are working from something I've written rather than what they remember form the phone conversation. They are to distribute my description because it gives directions on how to get prepared.

To prepare the participants for the postpartum, I tell them that they are to search for "artifacts" from the project. There will be a contest for the most, the most insignificant and the most unusual. This makes the preparation a bit of a game and encourages creativity. It has a side effect that they begin to clean up their desk. The best time for this search for artifacts is after the product is released and before the postpartum. Let's face it, developers are usually too tired to do anything else.

The second handout describes who I am, in a folksy description, to look less like a snooty expert and more like one of the regular folk (See Appendix D). I always tailor my description in ways that will help me be accepted into the firm's culture. I need to establish myself as a "safe person." Confidentially, trust, strength, leadership, and competence are values the participants need to see in me, if I am going to be an effective facilitator. I need to develop their respect for what I can do with them.

The first handout also mentions that I know that they have worked hard and are tired. It let's them know that I know that they probability have a few more important things to do than to get ready for the postpartum. By giving them permission to go do something else, which is unusual in this business, most participants eventually do find some time to search for artifacts but in a leisurely, non-pressured manner. I'm trying to establish a "it's okay to do what ever you can attitude."

The third handout asks each participant to confidentially answer some questions that help me understand the various goals and concerns people might have about either the postpartum process or the content of the postpartum (See Appendix E). This activity helps both facilitator and the participants. It helps the facilitator by giving me an understanding of the current environment, the various issues and view points. It helps me know where to probe, where the real problems lie, etc.

It helps the participants by letting them begin to put voice to dreams, hopes, and concerns. This may lead to finding the courage for deeper sharing during the postpartum because the tough issues have already been voiced. Once voiced, they seem less scary to discuss. Furthermore, there may be some sharing of the answers among safe allies, which will bring a stronger sense of the importance to bring issues up.

### 4.3 Working with the secretary

A smooth postpartum requires a number of supplies and support efforts. Several details need to be handled. I have a check list that I work from to make sure all is remembered (See Appendix F). I usually send it to a secretary assigned for the support of the postpartum, and then follow it up with a few phone calls.

### 4.4 Facilitator arrives a day or so before the postpartum.

I mentioned earlier, I assigned pre-work -- questions that I'd like to have answered, and we had also launched a "hunt for artifacts." Usually some where between 40% and 60% of the participants actually do anything. I spend the day before hand walking through the environment, talking with individuals.

For those who didn't do the pre-work, I let them know "that's okay, and now would be a good time to just hit me with what you have been thinking." For those who did submit pre-work, I like to discuss it with them a little. They like to know that I have read it. Occasionally, some really good piece is sent to me and I ask the author if I can share it with the rest of the participants.

Part of what I'm doing is learning about the environment, maybe getting to see the product, and getting a better sense of what has occurred during the project.

I remind everyone about the hunt for artifacts, and generally let people get to know me. This seems insignificant but is most important. It is during this time that I hear some of the deepest secrets.

Sometimes, participants want me to speak for them. They want me to present the stuff that they are afraid to discuss. I carefully explain that I see my role as a facilitator to help get the story out, I will not be an anonymous conduit for submission of problems. I explain that I do not have the whole context and can not accurately speak for others. However, I tell them that it is my job to find a safe way to surface these kinds of issues during the postpartum. I ask them to work with me, and share only what they feel comfortable sharing. If topics can't be shared, in other words, topics that were discussed with me, are not coming out, then that is the major problem to explore! I will surface this problem.

### 4.5 Effort data

The end of a project is a great time to look back across the entire project and answer the questions:

"What did this really cost us?"
"How many people did it really take?"
"How long did it really take?"
"When did people come and when did they go?"
"How much work did we accomplish?"
"What quality did we achieve?"

*Management Team:* Many of these questions can be answered by the management team. I ask then to search back through their records and come up with the best numbers they have for cost, time, head count over time, and quality. Our goal is to capture and archive "hard data" on this project to help us validate future efforts.

Effort data on one project will have some utility for the next project assuming the effort is comparable and the team remains approximately the same. However, when this

postpartum rests along side numerous other postparta then your firm has a significant asset in its documented "corporate wisdom."

Imagine the actual measures of cost, schedule, people effort and quality collected for 100 projects. As new project proposals are developed, the possibility for validating the estimates now becomes based on fact. Without a "corporate wisdom" validation is no better that one's intuition.

Validation is not the only reason I capture effort data. Another is to see if there is any interesting trends we need to investigate during the postpartum. Many times, I contact a manager about the effort data only to discover that he/she has spent hours looking many different aspects of the system. It was simply having to get started that generated all sorts of learning. What I'm looking for is course grain data; something that can help us quick approximations. One of my favorites is cost per line of code.

With some clients, I discover that such number are not possible to capture. This tells me a lot about the control that the managers have over their project. At the postpartum, I will surface this issue and see if the team has ideas on how we might capture better data on the next project.

*System Integrator:* I also want a detail view of the system that was built. Usually there is one person or a small group that can answer the following kinds of questions:

- What were the number of lines of code built?
- How many routines were built?
- What were the sizes of the routines?
- Which routines had trouble going through systems integration?
- What patterns do you see?

The person I'm talking about is the systems integrator or the person who manages the configuration management system. Working through the management team I will introduce myself to this person on the phone and we will begin to explore what kind of information is available and what would be interesting data to capture. I usually follow it up with e-mail that looks like the sample in Appendix G.

Depending on how comfortable the systems integrator is with public speaking I will either ask him/her to make a report to the postpartum community, or I will present the results.

## 5.0 Anatomy of a postpartum

As I have mentioned earlier, every postpartum takes its own shape. Thus there is no formula, so discussing how to lead a postpartum is difficult. In this section I discuss a fictional postpartum. While it is fiction, all my experiences discussed are based on the actual postparta experiences that I have led.

The postpartum I will describe involved a project to build complex software to aid in the genetic engineering community predict what would happen in commercial gene splicing experiments.

The group was very strong in domain knowledge. It had seventeen genetic engineers who learned programming skills on the fly to complete their Ph.D. dissertations. FORTRAN was their only language. The group also included four software developers, who knew little about gene splicing, and a great deal about developing UNIX based applications. Three managers lead the project. One manager and two genetic engineers were out sick/injured for reasons that could be traced back to gross over work.

This group was fresh out of a research environment, they had never produced a software product before. As you might guess the project had several slipped schedules; late in the game, major sub-sections were thrown away and built from scratch; several key researchers took early retirement at in-opportune times; and generally everyone worked too much throughout the summer and fall.

The postpartum was three days long and was residential held in an old hunting lodge.

Before the meeting, I sent a short description of the postpartum, and some directions of how to get prepared. (I have placed these directions in the library). They were to look for "artifacts" in their environment that gave us a clue of what went on during the project -- there would be awards for the most significant, most, etc. (Artifacts include old schedules - all versions, calendars, napkins with key designs, post cards from early retirees, user's manuals, bug reports, etc.)

Also before the meeting, I met with every person to explore what they hoped would happen in the postpartum and to hear any concerns that they had. All of this has been described earlier.

After Lunch -- First Day:

1) *Define success* -- I started with exploring with the group if they thought the project was a success. After hearing some half hearted self congratulation, I talked about the odds of a 400,000 line program being delivering based on the industry's history and pointed out that they were in the top few percent. So from one point-of-view, they were very successful.

The I used another point-of-view for success. "A successful project is one when we get to the end, everybody says: 'Gee, I wish we could do it again'", using this definition, was the project a success? I got the group to admit that it was not this kind of project, and it would be great if we could figure out how to get there.

2) *Create safety* -- I stressed that this process is not one of fault finding, but learning how to do it better next time. I stressed that everything in this postpartum is optional, and got everyone to agree, including the managers.

I noticed that there were managers in the room and wondered out loud if it would be safe to say what needed to be said. Through secret ballots, I collected a "1 to 5" rating of safety and put them up on a flip chart -- 2 people did not feel very safe.

I had people into "natural affinity" groups - that is, groups that they have some close working relationship with. The managers had their own affinity group, and I charged each group to find a private space and develop some ideas that we could use to make this postpartum safe and still effective. We returned and reported out the ideas -- we figured out how to integrate each idea into the postpartum -- most important for this group was a "no managers" session where I would report out the results. The managers could then ask questions and individuals in the group would answer for someone else.

We also established these ground rules for group behavior:

- We will try to not interrupt.

- We will accept everyone's opinion as neither right nor wrong, just as their opinion.

- We will talk about our own perspective, not for someone else.

- When the discussion gets going fast, anyone can pick up one of the manager's special coffee mug. It had a cartoon about poorly run meetings on it. Then the only person who can speak is the one with the mug. The mug would be passed to structure the discussion. If necessary, I would keep track of who's turn it would be to have the mug next.

- There will be no jokes made of other people in this room.

*Explanation: The ground rule "no jokes" is one I always establish for postparta. Sometimes humor is used to communicate "endearment" and sometimes it is used "to make fun of". As an outside facilitator, I can't tell the difference. Furthermore, there may be times when someone in the postpartum will be feeling vulnerable -- as something they did is being reviewed or has been reviewed. Often, normal group humor can be taken as an insult when the receiver is feeling vulnerable.*

*I have found it is best to suspend all "individual-based" humor.*

- These ground rules can be amended after any break.

A ground rule I rejected was: "Everyone must talk." One manager wanted some of the quieter people to participate. Forcing them say something, violated my rule that "participation was optional."

I explained that when someone was forced to say something, individuals are likely to say what they think management wants to hear, not what they think. After some discussion, we found the common ground.

A number of the women in the group found it difficult to participate -- they found some men would comment so quickly after a someone else's comments that they didn't get an opportunity to speak. When they were speaking, often they would pause, not because they were done speaking, but simply to take a breath. During this rest, someone would seize the moment and take over the discussion. The manager's intent was good, we just needed to refine it a bit. That is how we got the manager to volunteer his coffee cup as the talking focus.

A second vote showed everyone was comfortable and we continued on. If we can't establish safety, then the whole postpartum will be redesigned on the fly to deal with that issue. There is no reason to go on. No other valid data will come from the postpartum.

Once I asked a group having trouble developing ground rules to write down what their fears were (See Appendix H). We used the list to develop meaning ground rules.

In postparta where safety is a problem, it requires very experienced facilitators hopefully with good counseling skills to help a group work through this problem.

3) *Hold the Artifacts Contest* -- The "pre-work" had asked the participants to search for "artifacts" from the project (See Appendix C).

I asked my archeologists to share and describe their artifacts. The artifacts were placed on the floor in the middle of the room (seating was circular). Some people studied what others came up with, and we then voted on: the most, the most significant, and the most unusual.

Many artifacts were documents -- someone had a collection of all schedules, including the first one every produced. We laughed over how naive we were. There was the "coding standards" document that many had fought so hard over, only for no one to use it.

One important artifact was a place mat from a pizza house which held the new design for the database. This revision caused the performance to increase eight fold.

One engineer brought in his can of "Raid" bug killer. It had appeared on his desk one day after a long night of debugging. He had found several serious bugs the night before. I asked him what this can of Raid meant to him. He told me that the can had a yellow stickie that said "Thanks". He didn't know who had given it to him, but it meant a lot that some one had appreciated his effort.

As time went on, the collection of artifacts lying on the floor was amazing. Everyone could sense that a great deal had been accomplished.

*Explanation: This "artifacts exercise" causes the group to think back across the entire life of the project and remember what they had forgotten. Each artifact has a story because for some reason the discoverer of the artifact decided that this artifact was important. The telling of the story is a great way to begin to relive the project experience. We are beginning to build a community understanding of what went on. Story telling is a very old way to pass on wisdom and learning. These stories also set the context for all to come in the postpartum.*

*This telling of stories exercise is a great way to replace the fears of what might happen in the postpartum with the fun of reminiscing about the project. It is a good exercise to use early in the postpartum.*

4) *Develop a Timeline* -- In this exercise, I want each participant to add their pieces to a collective story. This exercise helps the group to understand all that occurred during the project.

I passed out 5x8 cards to the natural affinity groups. In one color, I wanted them to identify when they joined the project, in another color identify when a member of your group, left the project. We put those cards on a 30 ft piece of butcher paper tapped against one wall (it was divided by seasons of the year, from the beginning of the project to the end.)

Then in a third color, each team was to identify "significant events or happenings" to this project. One event per card. The natural affinity teams were used to cut down the number of "duplicate" cards we might get. It was not a consensus activity, it was to be an inclusive activity -- anyone who thought an event was important or significant could create a card for it.

I also find it interesting to see how the different natural affinity teams view the same event from different perspectives and which events are not appreciated by the various teams.

Eventually I brought the teams back together and had them place their "significant events" cards on the butcher paper - in the right time period. When I first started doing this exercise, I tried to create some order around putting the cards up, but the participants always seemed to make it a free-for-all. Later, I realized that this was a way to put up some "significant events" anonymously.

This usually brings us to late in the first day. We have a time line built. As a group we can spend some time looking at everything that happened, and I tell them we will spend the following day processing what we have created.

I then launch exercise 5 to finish off the afternoon.

We broke in the late afternoon with enough time to "go for a hike" or "play a little touch football." It was a time for some to play, others to be by themselves and think.

On the second day we begin "mining the timeline for gold." Quarter by quarter, we looked at the "significant events" for what we could learn. I had four flip charts and recorders --

one flip chart captured "what worked well",
a second captured "lessons learned",
a third captured "what to do differently next time", and
the last captured "topics to be covered in smaller groups."

Working with the whole team, I asked "what card should we discuss next?" and guided the discussion to something we could put on the flip charts. Not every card was discussed, and I often asked the postpartum community to look for patterns in the cards -- the same things said differently.

5) *Offer Appreciations* -- During my discussions the day before, I got a sense that many genetic engineers and programmers were not feeling that what they had done was really appreciated. There were a lot of heroic acts that had not been appreciated. So I chose to include an exercise to get appreciations out into the open.

I started the exercise by explaining how we rarely say "great job!" in our business. "You see it all the time in the sports world. It feels great, and doesn't cost anything. The fact is everyone has had to do something significant to get this product out the door -- and they need to be acknowledged for that."

I explained: "How this exercise works is -- someone who has an appreciation for another person will take the coffee mug and say the persons name and give the appreciation. The form of the message must be 'Bob, I appreciate you for ...'."

Often, people will try to change the phrase into "I appreciate Bob for ...". This does not have the same impact, so I help the speaker rephrase the message.

For some people, it is very hard to receive a compliment. I encourage then to just take in the message and leave it there. If they want to say "thank you" that fine, but they need not say anything else.

Once the appreciation has been delivered, the coffee mug is passed to the receiver of the appreciation, and they in turn can offer an appreciation. This goes on until I think most of the energy has come out. I usually make sure everyone has been the receiver at least once.

I end this exercise by observing that it really does feel good to receive appreciations. It is a gift that costs us nothing and means so much to the receiver. I note that each of us is

likely to think of more appreciations over the course of the postpartum and when we return back to work and encourage them to share their appreciations as they come up.

I suggest that it might be a good thing to add as an ongoing daily practice as part of this group's culture.

Evening:

6) *Passive Analogy* --We had a late dinner together. I had ordered pizza and drinks served in the lounge. It was a relaxed place with large couches and overstuffed chairs. I had a large screen TV. and VCR set up, we watched "Flight of the Phoenix". This movie stars Jimmy Stewart and begins with a plane crash in the dessert. The entire movie is about an engineering project as pieces of the plane are put back together.

When I introduce this movie, I encourage the community to how does this project compares with their recent experience?

Second Day:

On the second day, we "mined the timeline for gold" as described above, then moved into the session without managers.

7) *Session without Managers* -- I asked the managers to meet together and given what they had heard so far, develop a message of "what you would like the genetic engineers and programmers to hear from you."

Likewise, I worked with the genetic engineers and programmers to develop a message to managers. This is a very tricky activity to lead. I believe that the facilitator needs to have experiences leading people who are feeling small and vulnerable. I use Virginia Satir's work on Congruence to aid me in transforming ineffective messages into ones that will be heard by the managers. (See Appendix I.)

Here I was vulnerable, some management teams might have developed incongruent messages especially blaming messages to their programmers, this management team didn't. If I has suspected that we would break up like this, I would have arranged to have a colleague, familiar with congruence, help me keep this exercise from getting out of hand.

We then got back as a group, I presented each message to the managers, and let them respond. Then we let the managers give their messages -- things were getting pretty human by this time.

I was also struck how many of the messages were the same, only from a different point-of-view. This doesn't always happen.

8) Getting into details - We prioritized the "topics to cover in smaller groups" and divided up along topic areas for discussion and reporting out. Managers were not initially a part of this dividing up, but if the group wanted to invite a manager or more to join you, then please do so. (Every manager got at least one invite, some got many.) In reporting out we added more items to the three flip charts.

9) Understanding the importance of our findings - Back in the natural affinity teams, we prioritized the items on each of the three lists, and then shared the prioritization with the whole group.

10) What were the costs - In the past, collecting effort data, and size was a key part of the postparta. This time, that data already had been captured, so I passed out 5x8 cards, and asked each person to look across the timeline, and write down what they had sacrificed to complete this project. Lost vacations, lack of sleep, health, joy of life, what happened in your family?, etc. I then returned to the definition of success "Gee, let's do it again", and pointed out that they had accomplished something important in getting their product to market, and there were some sacrifices on their list that are not worth making again. I asked them to place a check beside what it is that they are not willing to sacrifice again. I then invited the group to share what they will not give up again.

It had been a long two days, they had gotten close, they were tired, they got real. We heard about cancer flare-ups, family strife, possible divorce, delayed honeymoons, pain around not being available for family emergencies, degraded health, fear of team pressure to work beyond what is possible, difficult pregnancy/impact on the baby's development, etc. We built "NEVER AGAIN" boundaries and as a team came to honor each other's different abilities to contribute.

9) We closed with "Hopes and Wishes"

My postpartum on the postpartum: Ten years ago, when I was at Tektronix, I used to lead postparta/postmorta all the time -- we had 86 on file. It had been some time since I lead a postpartum and I found I needed to do something different. I looked at this postpartum and compared it to the countless one's I used to facilitate before I started to use Satir's work and teach PSL. My old postparta were too much "in the head". This one was very powerful, and I don't think "just anyone" could lead such a session. It was my close work with Dani, Jerry, in PSL and with SEM and at Satir trainings that got me to this stage.

The 9 steps I discussed here is what I did this time around because it seemed to fit. I would expect my next postpartum might look quite different. "Going where the energy is" and "trusting my intuition" are my most important learnings.

### 6.0 Postpartum Report Archives

A Report is generated -- here is what it contains...

Archived for easy reference.

Archive function is sold to managers.

Researchers use the archive.

### 7.0 Questions and Comments

Seems like you are looking at a single team that holds together over time. We form teams on a project by project basis.

**Appendix A**
**The Four Freedoms of an Empowering**
**Software Development Environment**

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## Introduction

Software engineers have a most challenging and difficult profession. Software engineering is a field that has existed for only the past forty-something years. We have seen vast changes over this period of time in the hardware that we use, the magnitude of the goals we set out to accomplish, the problem solving techniques we use, the tools and languages we use, and the processes by which we go about our work.

When I was a professor, one of the last lectures I would give my seniors as they prepared for graduation was about how the half-life of their knowledge in the computer field is about three years. If they didn't continue to learn, try new things, change their approaches, then they would know nearly nothing about their profession before they were thirty-something.

The activity of continuously changing the way we go about our work is a necessity. Healthy organizations must continuously seek to improve their process. Specific changes can not be dictated from the top of an organization, and then followed by complacent employees. There is simply too much that needs to be changed. While top management is key in setting an example and supporting process change, every single person in an organization is responsible for continually improving his/her process as well as the process of the organization in which they work.

Quite simply said, every person must be empowered to work on continuous process improvement. I believe there is no more important goal facing software engineering than this.

But how do we empower people? As I teach and consult with firms across the United States, I find each firm has its own culture. There are cultures in which trying new things and risking projects is a natural way of functioning. Other cultures cause people to be stuck; their culture breeds dysfunction.

Some characteristics of these two cultures are listed below:

| **Dysfunctional Cultures** | **Functional Cultures** |
|---|---|

| | |
|---|---|
| Guarded language and secrets | Honest communication |
| Distrust of other groups | Alliance and cooperation with other groups |
| Well defined boundaries between groups; lots of discussion over whose responsibility it is; management driven | Boundaries are mutually discussed and agreed upon between groups; participants driven |
| Blame and lack of respect for other groups | Appreciates and uses the differences between groups |
| Skepticism of someone else's new idea or approach. Rewards for fighting someone else's idea. | Group refinement of an other's idea. Careful evaluation once experimentation with the idea has been performed. |
| Pressure to produce | Encouragement to improve |
| Behavior, process and activities highly influenced by past | Situations handled in the present with creative new solutions |
| Strong pressure to conform to the standard | Flexibility available for situations that are unique or new |
| Internal competition and survival are key issues; looking good is the way to progress | High quality results is the key issue; everyone looking good is the way to progress |
| Meetings are confrontive | Meetings are constructive |
| Engineers and managers feel powerless to change the organization | Engineers and managers believe they can change their organization |
| Decision making involves lots of debate, and the goal is to win the debate. Often the discussion centers around "the best way" to accomplish something. | Decision making is consensus driven, where "your idea is good enough" is combined with the author's responsibility to "make it work." |
| During decision making, proof of concept is required from colleagues; distrust of ideas and approaches is the foundation of the working relationship. | During decision making, respect for and trust of colleagues' skills is obvious. |

So how does one create an empowering environment? That is a question that requires a complex answer, and is usually best answered after study of the specific culture at hand (contact the author for other writings, or help on this question) but a simple start is to learn to use the four freedoms of an empowering environment.

**The Four Freedoms of an Empowering Environment**
In most organizations, software engineers work in empowering environments. Unfortunately, they usually don't know that they do. By exercising four simple freedoms, they can unlock the power to effect change in an organization.

In an empowering environment, everyone has the following freedoms:

- freedom to recognize and observe what is rather than what others want you to see,
- freedom to ask about puzzles,
- freedom to acknowledge and talk about what's coming up for you,
- freedom to talk about not having any of the above freedoms.

I think each of these need a bit of explanation.

**Freedom to recognize what is rather than what others what you to see.** What this means is getting at the truth of what is really going on in an organization and discussing it in a healthy manner (i.e., using "I" statements, staying out of blaming, talking about the activity or situation not the person, focusing on understanding the problem and looking for a solution, etc.).

I have seen many situations where a manager will operate on the basis of a schedule, when every software engineer knows that the schedule is hopelessly inaccurate, but is afraid to say anything about it.

I have seen an engineer so defensive in a walkthrough that no one is willing to offer any suggestions, and as a result, even though the work could be improved, it is passed. I have seen managers direct their engineers to take short-cuts that are not wise, but no one comments on the folly.

The sad part is that people do comment, but not to the person who needs to hear the message. It's the discussion at lunch, or the whispers by the coffee pot. An empowered environment can not have secrets. An empowered engineer or manager, needs to be able to talk about what they see, to clear-up misunderstandings, remedy situations or at least acknowledge that a problem exists.

Observing what is real, and talking about it without reprisal is one key aspect of an empowered environment. But talking about what we understand is only part of empowerment, another part is talking about what we don't understand. This leads us to our second freedom.

**Freedom to ask about puzzles.** I remember working in environments where I was perceived as the "expert." I did not believe that I was in a position where I could admit that I didn't know. Frankly, I did some damage by working in areas where I should have gotten help. The amount of time I wasted, and the cost of rework was a serious risk to the project.

Empowered managers, will admit that they are not certain and defer to their engineers in matters of technology deployment. Empowered software engineers will ask about management activities that they don't understand or have a clear picture of.

I watched a group within a large company go though the process of leaving the parent company to become a wholly owned subsidiary. I was amazed at how many questions the engineers had, but would not ask:

Will I have a job when the company spins out?
How secure is my job?
Will this new enterprise really make it?
Are we a profitable organization?
What about benefits?
What will happen to my retirement with the parent company?
Will we have to move?
Will we have to take a pay cut?
Will we get stock?
Will we still be on the internet?
Can we use the corporate library?

An empowered engineer would have asked these questions. There were meetings where the management team specifically asked for questions and the silence was deafening.

To be fully empowered, we need to be able to ask questions about the stuff that we are dealing with. To be fully empowered means knowing it's okay to not know, to not understand, to be confused or simply be curious. But still this is not enough. Empowered people have feelings about situations and these need to be acknowledged and discussed. The third freedom is about feelings.

**Freedom to acknowledge and talk about what's coming up for you.** For some reason, we have come to believe that feelings are not appropriate within the work place, and this is silly because we do have feelings related with work. Some feelings are fairly safe to express: being impressed with someone else's work, excited about a success, interested in a new idea, enjoying working with other people, fascination at learning something new from someone else, etc. But then there are some other feelings that are more risky to express: frustration, disappointment, boredom, fatigue, hopelessness, devalued, etc.

These riskier feelings need to be expressed. They are not useful when kept inside, and if we don't express them we will continue to harbor them. Feelings dictate behavior, and

such negative feelings will only lead to negative behavior - i.e., performance on the job - that is not empowering. Often these feelings come from simple misunderstandings. Misunderstanding as cleared up by talking about them.

Where the source of the problem is not misunderstanding, then at least the problem is identified. From there, the parties involved have the opportunity to change the interactions in ways to better empower all involved.

One feeling not mentioned above is fear. The greatest fear we have in creating an empowering environment is establishing and believing that we have these freedoms. So the last of these four freedoms, speaks to that issue.

**Freedom to talk about not having any of the above freedoms.** An empowering environment is not a static thing. We are continually working to build it. This means continually taking risks to exercise the freedoms described above. A few colleagues might agree to use the four freedoms among themselves at first and then try to use the freedoms with a few more people. Likewise, engineers might begin to increase their empowerment by talking about exercising these freedoms with their manager.

A key word used above is *agree*. To start empowering an environment, you might talk about these freedoms. What would the benefits be? What are the risks? And then come to an agreement that these freedoms do fit for your group (or if not, then revise them). Then continue to talk about the freedoms as you try to apply them. You might even start a message with "I'm going to try something different here. I think this is a situation where I might be able to use one of our freedoms. . . ." This let's everyone know that you are trying unskilled behavior. Maybe they will cut you some slack, or give you some encouragement.

When things get tense, it is easy for those under pressure to loose sight that all those around them have these freedoms and move to limit the freedoms. In such situations it is quite useful to initiate a conversation by saying, "I'd like to exercise the fourth freedom that we have agreed to. I'm at a point where I feel a reluctance to . . ."

These four freedoms do aid those who are trying to create and ever more empowered environment. Each of these freedoms needs to be claimed, exercised and, in the heat of the moment, defended. But alas, all things intended for good can be used for other ends.

**Abuses of the four freedoms.**
Any one of these freedoms can be abused. Early in this discussion, I listed some characteristics of a dysfunctional and functional environments. In deploying the four freedoms, if your goal is to achieve a characteristic of a functional environment, then the use of these freedoms is authentic.

But habits are hard to replace. When we use a freedom to maintain a characteristic of a dysfunctional environment, then it turns out we're not really using a freedom but is

probably inflicting a rule upon some one else. When exercising freedoms, be sure of the motivation.

Another abuse is expecting a particular outcome from exercising your freedoms. You have the freedom to recognize and observe what is, rather than what others what you to see, but you should not necessarily expect that something will be done about it. In an empowering environment, it is enough, initially, to just recognize what is, and talk about it. Changes and improvements might take some time.

You might ask about a puzzle and be told that that information is too sensitive to be distributed. At least you may talk about how the existence of that puzzle impacts your ability to get good work done and empower your organization.

**Summary**

As with most papers, the summary is the end, but in this case, I hope it is the beginning of a long and successful effort to continually create a more empowered environment in which to work.

We talked about several characteristics of an empowered environment. While these might be nice to hope for, a firm's culture might not always automatically provide them. We need to create such an empowering environment by exercising our four freedoms. These freedoms: recognizing what's real, asking about puzzles, talking about what's coming up for us and continually talking about using our freedoms, are the keys to creating an empowered work environment.

**Acknowledgments**

The wording of the four freedoms comes from Donald C. Gause & Gerald M. Weinberg's discussion on the art of being fully present in *Exploring Requirements: Quality Before Design*. Dorset House Publishing, 1989.

Earlier work developing these freedoms can be found in Virginia Satir's *Making Contact*. Celestial Arts, 1976.

**Appendix B**
**Selecting a Place for a Postpartum**

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The location for a postpartum is very important. Feel free to give me a call and discuss the facilities that you are considering. Here are some factors to consider with rational:

*The location should be residential.* A postpartum, in part is about healing as a team after going through a tough time getting to the end. Spending the evening hours and going for a run in the morning, eating meals, etc. is an opportunity to begin the rebuilding process.

*The location should be at least 100 miles away*. As mentioned above, part of a postpartum is to re-establish working relationships that may have been stressed during the later stages of the project. A two hour car ride, where car-pooling is required (say to keep mileage costs down, or limited parking problems) provides away for people to begin to talk again.

We want people focused on many of the subtle aspects of team building, returning home each night to spend time with the family is important at the end of a project, and it will not help with the team repair process. Please discourage requests to head home, and be flexible for serious situations.

*The location needs to provide for break-out areas.* There will be times when the whole team will need to break up into sub-teams - about 5 people per team. Each team will need to have a space where they can discuss issues in relative private from the other groups.

*The facilities need a large meeting room.* At various times we need to get together and compare notes. This room needs to be large enough for the team to form a "U" shape seating arrangement. We need to be able to tape paper to the walls.

*The facilities need to provide some relaxation benefits.* A postpartum is not a boondoggle! However, we will want to take breaks and let people's minds rest and think. We need to provide time for one-on-one discussions. Hiking trails, hot-tub, pool table, etc. provide this kind of opportunity.

## Appendix C

## What is a Postpartum, and How to get Ready for It

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*Postpartum* is Latin for "after birth" and is commonly used by the medical field to review how a delivery went. In the software engineering field, the purpose of a postpartum is to review your most recent project, to understand what happened, what worked well, and what to do differently next time. It is not an activity of finding fault with anyone, but rather an activity of learning from our experiences.

To get your project to this stage, I know you had put out a great amount of effort and made many sacrifices. In a sense, the effort and sacrifice is *the tuition that you paid, now the question is -- are you going to learn anything?* That is what this postpartum is all about: LEARNING TO IMPROVE BY REFLECTING ON OUR RECENT EXPERIENCES.

During the postpartum, we will review the entire project from many different perspectives, using as much factual information as can be discovered.

Such a review is much like an archaeological research project, in that we want to learn and remember, in part, by collecting and analyzing artifacts from the project. By artifacts, I mean memos, meeting notes, old schedules (all of them), calendars, white papers, budgets, project plans, personnel loading charts and so forth. Anything that will remind you of what happened during the project and give us some idea of when it happened. One of the things we will do as we analyze these artifacts is construct a "time-line" of important events.

**To get ready for this postpartum, please search your desk, your brief case, your old e-mail files, notebooks, bug status reports, old conference room schedules, notice boards, and where ever else you can think of, for artifacts.**

One key artifact is your calendar from the beginning of the project -- please bring it. It is a good idea to review your calendar artifact to refresh your memory and to find clues about where else to find artifacts.

At this moment you are probably worn out and "getting away" is most likely higher priority than looking at your recent past. Take some time for yourself, its important, and

then please put some effort into this artifact dig. We want the next project to go better than this one, and we can only do this if we learn from this one. There will be some *significant* awards given for the "most artifacts collected", "the most unusual, creative, or unique artifact" , and "the most important artifact".

**A second activity, to assure we have an effective postpartum is to answer some questions I have included as *Postpartum Prework*.** Your answers will help me get prepared, and might begin the review process for yourself.

Congratulation on getting to the end of the project. I look forward to working with you.

## Appendix D

## Who is Norm Kerth?

I know there are a number of you whom I have not had the pleasure to met. I suppose you are wondering who this guy is who is coming in to "lead this postpartum."

*After all, he's over forty, never wears a tie, has a beard, and lives on a houseboat -- can he be trusted?*

I guess I should tell you a bit about myself. I graduated from Cal - Berkeley in Electrical Engineering and Computer Science in 1974. While a student, I worked for Hewlett-Packard in Quality Assurance for their hand-held calculators division.

From there, I spent 10 years with Tektronix -- engineering software for test equipment, integrated manufacturing test systems, and a number of embedded systems applications. Eventually, I moved to Tek Labs, the research organization to create, lead and manage the Software Engineering Research Group. Our responsibility was to look at ways to help Tektronix improve software development. Issues we addressed included: walkthroughs, methodologies, CASE tools, building reusable software components, object-oriented technologies, software project scheduling and effective software management.

During my tenure at Tektronix, I performed numerous postparta and postmorta -- between myself and two colleagues, we performed 86. A report from each was placed on file and was available for review. Several wise managers, spent time looking at lessons learned from the past, as they started to plan for their next project. The value of a corporate wisdom base is often not fully appreciated.

I joined the University of Portland, in 1984. I taught operating systems, and software engineering courses. At the same time I started my consulting practice. This practice is best described as "helping companies get better at developing software on time, in budget, and in a manner that is enjoyable and rewarding."

I have special interests in the areas of object-oriented methodologies, software engineering and quality assurance. Most recently, I have been active in furthering the emerging *patterns* field.

Oh, I guess I should tell you that I am a Smalltalk bigot, but honor the fact that C++ is a fact of life. Frankly, I believe which language you use is less important than mastering the requirements, the design, and the quality assurance process.

I hope this answers a few questions about me. I look forward to trading stories about our experiences.

## Appendix E

## Postpartum Prework

Norman L. Kerth
Elite Systems
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72073.3222@compuserve.com

On November 30 to December 2, 199X, I will be working with your group to review what went on during the Acme project. As I explained in my "How to get ready..." document, the goal of this review is to understand what happened, what worked well, and what to do differently next time. It is not an activity of finding fault with anyone, but rather an activity of learning from our experiences.

To help me get prepared for this postpartum, I need some information from you. I have a number of questions that I would like you to take the time to answer. You can respond in several ways: send me a letter, e-mail, fax, or try a phone conversation. I'll let you decide what best fits for you.

Mail to:
Norm Kerth
P.O. Box 2205
Beaverton, OR 97075

E-Mail on the Internet to:
72073.3222@compuserve.com

Phone me at:
503-297-8677

Fax to:
503-245-4887

Your answers to my questions will be kept in strict confidence. I will review every one's comments and discuss the patterns I see across the group, but no individual's response will be singled out.

So here are my questions:

1) For us to learn the most from this experience, what topics need to be discussed?

2) What do you hope can happen for you during our postpartum?

3) What long-term impact do you hope this postpartum can have?

4) What reservations, concerns or worries do you have about this postpartum?

5) What else should I ask and how would you respond?

6) What feelings are surfacing for you about this meeting?

In order for me to a good job of getting prepared, I need your answers by November 27th. I thank you in advance for your effort.

Norm.

**Appendix F**

# Postpartum Materials List, Stuff to do, & Check-List

Norman L. Kerth
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Here are the materials that we need for the Postpartum. Some materials are necessary, some are nice to have. After taking a look at this list, if some materials are not available then please call me and let's see how important they are. I have also included some tasks that need to be done, and stuff I've learned to ask about over the years.

One flip chart, with full pad of paper and working pens for every five people in the postpartum. (An extra flip chart might come in handy if available)

30 ft of Butcher Paper; about 30" wide, or twice that if about 18" wide. A butcher shop might be a place of last resort, if you can't find any around your plant. A drafting supplies store will also be able to accommodate you.

Masking Tape(5-6 roles), or what ever the meeting room owners prefer used on their walls. We need to hang the timeline, and also several flip-charts as we discover stuff. How do we do this? Can we do it on windows?

File cards 800; 5"x8", and plenty of marker pens.

A box of tissues.

A package of note pads, a box of pens in case someone forgot to bring something to take notes on.

Awards for artifacts hunt. (Norm will bring)

Flower arrangement. About 3' long, 2' high and 18" deep (often called a "mantel" arrangement). Use lilies or if not available, some other very fragrant flowers. $100 top limit (I'm flexible, each region has different prices on flowers, if $100 will not buy a "nice" arrangement, then give me a call). Must be delivered before course starts. Plastic base is fine, make sure they include plant food. Must last for three days. We will add water throughout the meeting.

CD Player & CD's. (Norm will bring)

Arrange for a VCR and Television, please rent the video tape "Flight of the Phoenix". During the movie, it would be nice to have munches: popcorn, pizza, soft drinks & beer(?), etc. Discuss with conference staff where we could hold this (it will be the first night). Plan for a second "party" on Thursday night, but realize that we may skip it depending on the energy -- what we are looking for here is a way to play together: pool, poker, ping-pong, or what ever they have available. I'm not looking for a formal sit-down dinner.

Find out about "break out rooms or places near by that small teams of about 5 can work with a flip chart. If not rooms, then just space, in or around the main meeting room.

Please arrange the chairs in a "U" shape, without tables. Include about three tables in the main meeting room against the walls, plus one for refreshments.

Interface with the conference people to find out about meals -- what time, and what flexibility on the time do we have. What needs to be worked out for refreshment?

Artifacts awards are bottles of wine. Okay, if not consumed at conference center? If not then what else would be good awards?

Times for the postpartum: I suggest that people plan to arrive 10:00 to 11:00, get a chance to settle in and explore, we'll have lunch at Noon, and start the postpartum at 1:00.

I would like to have access to the meeting rooms an hour or so before the Postpartum is scheduled to begin arranging.

How are the rooming assignments being handled? Smoking vs. non-smoking etc.? I'd like a non-smoking room. How about special meals?

P.S. An overhead projector is not part of this list. It was not forgotten, I will not need it to lead the exercise.

## Appendix G

## Effort Data E-Mail Challenge

Norman L. Kerth
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Howdy Fred,

I understand from Mary Smith that you will help me collect some effort data on the recent project.

The end of a project is a perfect time to figure out how much effort really went into the project. This effort data collection may aid in "learning what to do differently" but the real value is in the developing a corporate memory on past projects. This is useful simply as a reality check during future scheduling efforts. Comparing the expectations for the future against past projects is a good way to validate, or question pending schedule plans.

Most software organizations have a long term optimistic memory. This means a project from the past is remembered to be easier than it actually was.

For some postparta, it is useful to collect "effort data" at the meeting and at others before. This information might show interesting trends...but you don't know for sure until the data is collected.

Of course, sometimes this information is just not available and this leads to a discussion of what data do we want to capture "next time around."

So here are some questions I pose to you. See how well you can answer them.

0) Total number of lines of code produced in your project as reported by your compiler (the compiler documentation might list lies-of-code as "program statements").

1) What are the meaningful "chunks" of work that we want to/can capture effort information on? "Schedule-tracked activity" is a good "chunk", others include by the Red Team, by the Blue Team, etc. or by person. If possible, get the information by schedule-tracked activity (this is an item on the schedule).

2) For each chunk, count lines of code.

3) How many lines of code were produced for some earlier similar project? Can we make a meaningful comparison?

4) In terms of "lines-of-code," what percent of code was not written from scratch? What effort did it take to incorporate this "foreign" code?

5) Capture the calendar time and number of people for each chunk. This might be difficult -- sometimes, an activity changes over its life, and people come and go. The chunk might have started out as one chunk and turned into three chunks, etc. The effort people put into that chunk might not be clear, because they "put in 60 hours per week". Do the best you can. If there are a great number of changes in the schedule, to the point where it can't be tracked, then that is interesting to look at in the postpartum, and precise numbers become less important, than discussion about what to do differently. Likewise if effort is not clear, and over-work seems to be a major, then again, we need to address this in the postpartum.

   Also, for each chunk, I'd like to get a number of "number of schedule slips."

6) At some point, number of bugs and time spent debugging are also useful numbers to try to capture. Quantitative numbers can usually be found by reviewing the closed (and un-closed) bug reports. However, such data is also very dangerous to compile. If defect data is used in performance reviews, then the bug tracking system will be subverted! This question is best left for a later postpartum when trust is much greater.

I expect that you should be able to answer question 0. It would be great if you can also answer questions 1 and 2.

Questions 3 might be harder to get. I'd be surprised if you can reconstruct enough information for it.

Given the time, I doubt answers to questions 4 and 5 are reasonable to expect, however think about what meaningful data you can capture.

These questions are guidelines. Use your curiosity and that of your colleagues to formulate interesting questions and try to get answers. Let's talk on the phone and figure out what really makes sense after you have had a chance to think about this.

By the way, I suggested the "lines-of-code" measure because compilers usually can answer that questions. I know of the inaccuracies of using such a metric, and if you have a better metric I'm open to it. What I'm looking for here is:

- some measure of effort that we can use to discover "interesting" things about this project,

- raise questions that we know we can not answer this time around, that would be useful for us to try to measure next time, and

- demonstrate that we worked harder than we realize.

I'll call you soon and see how things are going with this investigation.

Norm.

## Appendix H

## Fears of a Postpartum

One group I was working with was having some difficulty with establishing ground rules to assure safety. All the rules seemed to be motherhood statements. I asked each person to write their greatest fear about this postpartum on a card and pass it to me. I would read them anonymously, and then take the cards with me so no one would see the hand writing.

Here is the list of fears going into the postpartum:

I'm shy in large group settings.
I don't negotiate well on the spot. Need time to process.
"I'm the only one who feels this way".
The person might get angry.
Inadvertently hurting someone's feelings &
hurting future working relationships
If I express my opinions strongly, I may alienate myself from the team.
Long term impressions and perceptions people will have about you.
They will think you have a certain attitude.
People will take offense at something I said. For others, this is a more
sever issue when the other person is a manager.
The consequences for my family of me getting fired.
Getting sidetracked forever.
Being too open.
Fear of being blamed for others problems - being a target.
Baseball been berry berry good to me.
Being misunderstood & causing more damage than good to team.
Being tagged as a candidate for "culling" because of disagreement with the approach being taken by management. If an individual disagrees with the way the team is being built/organized, can that individual be trusted?
I will be made to feel inept and a source of pain for the team.
Fear of looking stupid. Fear of not being taken seriously.
Not being taken seriously. Exposing myself w/ people I don't consider to be my closest friends.
People forming opinions from what you say. Opinions that will carry on for a long time.
Long term damage to personal relationships which may affect team
effectiveness.

I think it was useful to get this information out in the open. Suddenly the group realized that they were not alone in some of their fears. Now, as a group we could suggest ground rules, not for one's self (which would be public), but to assure that these fears could be put to rest for the group.

NOTE: The fear "Baseball been berry berry good to me" was not really a fear but one way for a person to say, "they were not concerned", but did not want to be seen not writing something on the card.

I had one experience where I felt that the ground rules had be forgotten late in the second day. On the start of the third day, I reviewed the ground rules and asked "how well we were in establishing safety and adhering to our ground rules." Surprisingly, the safety measure had gone up! By the last day, I guess the team had understood that this was not a witch hunt so the ground rules were not quite so necessary.

# Appendix I

## Satir's Congruence

To be developed.