Automating Your Museum

A five-part series

Introduction

This series of articles is intended for the museum professional who is involved in planning major new systems. Usually the largest systems that museums acquire are collections management systems (CMSs), but these articles will address systems of all kinds. And although the web pervades our jobs and lives, there is nothing different about planning web projects. Good planning applies to all technologies.

Having been a consultant in museum information systems since 1986, I have found that cookbook approaches do not work, because each museum's situation is different. Therefore, these articles will teach the principles of good planning, rather than giving a cookbook approach. I will not cover strategic planning -- the planning of the museum's mission and goals. Instead I discuss planning for technology projects which support the mission and goals.

The articles assume you have or plan to hire a consultant. Most museums facing major systems projects hire a consultant to assist with technical knowledge about the systems and experience with planning and procurement. But hiring a consultant is not the end of your responsibilities. On the contrary, the more you know about systems and about planning, the more you will get out of your consultant.

Part 1: Making a Plan

Why Plan?

I have seen more problems in museums because of lack of planning than from low funding, incompetent staff, or bad management. And yet the decision to plan is within our control, whereas the other factors may not be.

Have you ever gone shopping with a plan? The shopping plan might be a list of stores to visit and what to look for in each store. When it's on paper, you can then number the stores in the order you plan to visit them. This is obviously less fun than recreational shopping in which you just wander the mall, but it's more efficient. And our duty as professionals is to be as efficient as possible.

To strike nearer home, have you ever participated in a well-planned committee? If so, then you know the pleasure that results from having an agenda, having the correct briefing documents, and holding meetings that stick to the point and end on time.

Anything can be planned, and in our work life, many more activities should be planned than usually are. Planning is the 10 percent of the effort that can produce 90 percent of the benefits.

Of course, not everything needs to be planned, but a good exercise is to think about each activity in your work day and decide if planning would help it. Eventually you'll begin to divide every activity you do into two phases: planning and execution. The increased efficiency and control over your time will be greatly satisfying.

We all know we should plan, yet we repeatedly undertake projects with museum-wide implications with the sketchiest of plans. Quite often planning is skimped on because of time constraints or for political reasons. But will the time needed for planning really be worse than a quick but wrong decision? In fact, a bad systems decision can cause huge amounts of pain and dollar costs for years into the future.

When to Plan (And When Not To.)

OK, do you spend your entire day planning? Well, some jobs are like that, but most of us are also required to accomplish something. As a former boss at the Smithsonian used to say, "Enough planning! Let's see some action!"

I suggested above that you think about each activity you do to decide whether it needs a planning phase. It's really a matter of asking one question: Are there major long-range consequences to this activity? If so, planning is essential in order to ensure the optimal future for the museum. If you prefer, another way of looking at it is: Can the decision be changed easily? If so, planning is not required.

Thus I do not advocate making a plan to decide what kind of coffee to buy for the staff lunchroom. There are no long-range implications; it is a decision that can easily be changed. (And by the way, this is also a clue that not much time should be spent on this decision. Let someone make a decision, and if it's wrong, change it.)

Get in the habit of asking yourself whichever of the two questions you prefer, for each activity throughout the day. This will tell you whether you need to plan or not.

The next step is to decide how large the planning phase has to be. Sometimes you can plan a meeting while you're walking down the corridor; other meetings require the preparation of documents, preliminary briefings of key staff, or other lengthy activities. The remainder of this article will help you determine how much planning is needed for any activity.

What Is Planning?

So what exactly do you do during the planning phase? I suggest that the most valuable thing you can do is develop alternatives. After all, when you don't plan, you still do something, usually the first thing that comes into your head. But how do you know that is the best thing to do?

Instead, I suggest that you think of at least three ways of accomplishing the goal. For a simple activity, you can do this in your head. For example, as you walk down the corridor to a meeting, think of three ways to deal with a staff member who digresses in meetings. Now you have some choices to select from. More complex activities require more complex planning, but they are essentially still about developing and then evaluating alternatives.

Why Planning Is Hard

Why do we resist planning? There are many reasons, some based on fear, and other based on perfectly sound thinking that just happens to be wrong.

- One reason we don't plan is because most of us enjoy the challenge of dealing with events as they occur. To plunge into an activity and work your hardest against overwhelming odds does provide a sense of accomplishment at the end of the day. Yet we are not paid to acquire a sense of accomplishment, but to accomplish. And the more we accomplish the more we are of value to our organizations -- and to our own future careers. Thus we may need to trade in some of the emotional satisfaction for more objective results. In other words, planning makes you more efficient.

- Another reason we avoid planning is because we have all seen the waste that results from over-planning. Most organizations have thick binders full of master plans, strategic plans, consultant's reports, surveys, and other large planning efforts. Looked at a few years hence, most of these are just scrap paper. However, it is wrong to think that the present value of the plan accurately reflects the value of the planning that went into it. What you are looking at is the plan, not the planning. Behind all that paper was months or years of real human interaction and maybe even thinking! And it is this planning, not the plan, that provided the real value to the organization.

- Another typical reason to resist planning is that some people use it to avoid the risk of doing anything. This is called "paralysis by analysis." Incompetents plan because they can't do, and it is a safe activity for them, because who can fault them for planning when it is universally recommended? Of course, this just proves their incompetence, since a good planner knows when to stop. And that is the secret: scale your planning to the size of the problem to be solved. Don't buy a CMS based on reading a few journals, yet don't have a committee meet for a year to decide what copier to rent.

- Finally, planning is hard because we somehow feel we must predict the future. Some newspapers commemorated the new millennium with a retrospective of predictions for 2000. Naturally most of them were so wrong as to be ludicrous, even those made as recently as the 1970s. So I do not advocate you add to the world's stock of ludicrous predictions in your planning. Instead, the purpose of planning is to position your organization to be able to deal with any foreseeable future. For example, you cannot know how large your collections will be in 10 or 20 years, or what gifts you will receive, or what collecting policies will be mandated, or what curatorial areas will be important, or especially what systems technology you will be using -- but you do know that all these factors will change, and the more they change the better control over your collections you will need. Thus you plan systems that will give you this control regardless of what the future looks like.

How to Plan

So let's assume we are about to begin planning for a new CMS. What's the first step?

If you have followed what I've said above, you will probably not be surprised to learn that I advocate that planning begin with planning. After all, the planning itself has major long-range consequences, which means it deserves planning. In other words, you need to plan the planning.

But how? The answer may surprise you. The fact is, you really don't have to know what you're doing, as long as you follow a good methodology. As I said above, it is not the plan that is of value, but the planning. Thus any techniques that force you to develop and evaluate alternatives based on your museum's needs will have huge benefits.

There are lots of planning methodologies in print, many of them geared to non-profits. But I believe it is not the specific planning exercises and forms that are of value. In fact, by focusing on these, as so many methodologies do, they lose sight of the really important aspects of a planning methodology. Therefore I will outline the general principles I feel are important.

Here are the factors your planning methodology should include:

Stakeholder analysis

Stakeholders are those persons and organizations that will be affected by the planning. For most of the major systems museums install, this includes just about every department in the museum. But it can also include persons and groups from outside the museum, such as visitors, friends, neighbors, trustees, and volunteers. Stakeholder analysis is simply determining how all these groups will be represented in the planning process.

Planning Team

The Planning Team will have the primary responsibility for conducting the planning for the new system. (Quite often they also guide the implementation.) This team should be kept small. I recommend it be about five people, seven at the most. Each additional person adds enormously to the difficulties of finding meeting times, and to the duration of the meetings. The larger the team, the more time you will spend on the mechanics, and the less on the content. This is a hard pill for museum people to swallow, as we tend to want to be inclusive in our work. But not only will a too-large team risk failure, but your other work will suffer as you spend longer than necessary working out details with too many involved. It's really not fair to the museum to have a larger team than necessary.

The Planning Team should be comprised of people at the working level up to department heads, rather than executives. The team will be handling endless details, and executives are just not able to give the process the level of attention needed. Normally the team members are chosen ex officio, based on their jobs. So a CMS planning team will naturally include the collections manager, the registrar, a curator, an exhibits designer, etc. This automatically ensures that these major stakeholders have the required input. However, it may take some finesse to ensure that the right curator, exhibits designer, etc. is placed on the team. You want smart people with relevant background, not political figures.

I'm sure you are now asking how such a small team can represent the wide variety of stakeholders. The answer is the Steering Committee. This is a higher-level team that meets less frequently, and can be far larger than the Planning Team. It exists to ensure that the Planning Team is considering the needs of all stakeholders (not growing introspective or short-sighted), and also should provide the policy decisions that the Planning Team will need. The Steering Committee should represent the highest levels of the museum administration by including the director or deputy director. It should also represent the breadth of the museum by including representatives from each department. This is where you put people who need to be included for political reasons but are not appropriate for the Planning Team. And I do not mean this facetiously: the Steering Committee has a very real role in ensuring that the new system will meet the needs and priorities of the museum.

The Planning Team should report to the Steering Committee regularly, each month or every other month. By now you should not be surprised to learn that I advocate the Planning Team prepare a formal presentation -- not to have a lot of slick transparencies, but to force you to perform a procedure that will have many side benefits (just as it's not the plan that's important but the planning.) I guarantee that the discipline of preparing to present your work to the Steering Committee will catch all sorts of problems and omissions.

Go Away

Planning is very hard to do, and especially hard to begin. If you hold your initial planning sessions in your building, you're just begging for people to take advantage of every opportunity to do things that are easier, like take phone calls, deal with crises, meet visitors, and the thousand things they do every other day. These interruptions do not just affect the person interrupted, but send a very bad signal to the rest of the planning team ("what I'm doing is more important").

Groups go through four stages, which facilitators like to call "forming, storming, norming, and performing." This implies that the first thing a group must to is "form" itself from a roomful of individuals into a group. I'm sure you've all felt that moment when people start to work and think as a team, and that achievement is the first goal of the team. Well, it just can't happen if people are coming and going, working or on the phone during meetings, or continually putting other priorities ahead of the team. By going off-site, the opportunities for these kinds of interruptions are reduced drastically.

Why is "forming" important? Simply because as human beings we function better in groups than as collections of individuals. We are more creative, have more ideas, and come to better solutions. (I will revisit these ideas in a later article, along with the phases of "storming, norming, and performing.")

Once the team is formed, it is strong enough to function onsite. However, I recommend that the team have a standing rule that it not be interrupted during meetings. It's not fair to the other members, as time is always wasted filling in the interrupted member. Or if interrupted one is not filled in, something else is lost.

If a Planning Team member is continually interrupted, that person should be shifted to the Steering Committee. They obviously do not have time to be on the Planning Team.

Facilitator

Any group activity can be separated into the process and the content. A facilitator is a person who is hired to focus on the process, so the museum staff can focus on the content. For optimum planning, it is important that ideas be heard and given a chance, but so often in meetings ideas are forgotten or even squelched before they can be considered. A facilitator provides a format in which ideas are recorded and considered systematically.

Therefore I recommend that the first meeting of the combined Planning Team and Steering Committee (the meeting that is held off-site), be conducted by a facilitator. This meeting will comprise the formal beginning of the planning process, and thus should result in a statement of goals for the new system, as well as schedules and budgets for both the system and the planning process. But in addition, the importance of a pleasant, satisfying beginning to the planning cannot be overemphasized.

Evaluation

Finally, how do we know if our planning is any good? We must constantly ask ourselves this simple question: Will our plans achieve the desired results? Here are some examples:

- You have just outlined the requirements for a CMS that is intended to further the museum goal of "translating collections into meaningful educational, aesthetic, intellectual, and cultural experiences" for your visitors. Will the CMS you just outlined actually do this? How? How will a lot of data provide these experiences for the visitors? Is something more needed, such as interpretive information? Perhaps the data needs to be available via the web? Would this actually help people, or will they say "so what?" These questions are all ways of asking whether what you just planned will actually achieve the desired results.

- You want to make your collections data available on the web for schoolchildren, so you decide to use the CMS vendor's search front-end. Will this really achieve the goal? Do schoolchildren really want to type words into boxes, or are they more interested in the stories behind the objects?

- You want to show the beauty of your objects by adding pictures to your website, so you buy a digital camera to take a picture of every object in the collection as it is registered. Will this achieve the goal? Is your registration staff capable of taking beautiful pictures of a wide variety of objects under time pressure? Did you allow them more time per object because of the need to photograph? Don't you really need a professional photographer with a studio in order to get the best results?

- You want to ensure your CMS will handle your needs for 10 or 20 years into the future. Have you made any decisions that assume your collections will never grow beyond a certain size? That all your collections will be in one building? That the curatorial departments will remain the same? That collections cannot be sold or traded?

In other words, the planning isn't over once you have a plan. You need to compare the plan to the goals of the project and see if the plan has a good chance of fulfilling the goals.

The obvious time to perform the reality check is when you have finished planning. Of course, if you leave it to the end of the process, you run the risk of major disappointment and ridicule, not to mention the risk of having a bad solution implemented just because time has run out. Instead, make sure you include a reality check whenever you are evaluating alternatives, throughout the planning process. And make sure the reality check compares the alternatives not just to the present goals, but to any possible future, as illustrated in the last bullet above.

When to Stop Planning

I'm sure you'll agree we want to avoid "paralysis by analysis" -- that condition of perpetually planning and never executing. But how do you know when you have done enough planning?

There is a concept in decision theory called "the cost of perfect information." Perfect information is knowing absolutely everything you need to know to make a decision. For most non-trivial decisions, perfect information costs so much it is not attempted; instead, we make decisions based on information that is incomplete and even incorrect.

For a complex moving target like a major system acquisition, perfect information is unattainable. Even if we could afford to gather every bit of information that could be useful to a decision, it would take so long that the situation would have changed.

I defined planning as the development and evaluation of alternatives. So it is a process for generating information for making decisions. Thus you should scale the planning to the decisions to be made.

So when do we stop planning? My obvious rule of thumb is to stop when the value of the additional information would be less than it would cost, either in money, staff time, or the cost of delay. You plan until you feel you can make the decision with a reasonable degree of certainty that it is the best decision, then you stop.

I'm sorry there are so many subjective terms in this definition: "worth," "reasonable," and "best." But these words reflect the reality that knowing how much to plan and when to stop is a matter of judgment. The best you can do it to give yourself every opportunity to leverage your judgment: by working with a team so that more than one mind is involved; by adding experienced staff to the team; and by using an experienced consultant.

Part 2: Managing the Project

What Is Project Management?

Let us begin by asking, "What is a project?" A project's main characteristic is that it is intended to accomplish something unique; in other words, a project is always a special project, something that is done only once. Even if you choose a new CMS every five or ten years, it's not the same project each time, as the requirements and situation will differ greatly. Projects are thus distinguished from operations, which are by definition repetitive.

Because projects are unique, each one is a new situation for the project manager. Three important implications are:

1. The goals and context of the project are unique, including the relationship of the project to the larger organization.

2. Projects are performed by an ad hoc team, a group that may never have worked together in the same way, and may never again after the project is over.

3. The procedures followed by the project team to do its work may be completely new to all participants.

Because there is so much new, the critical job for the project manager is to focus on the process enough for it to succeed, but not so much that the substantive goals of the project are neglected.

Now we can answer the question, "What is project management?" Clearly it is that branch of management that deals with unique, one-off situations. This uniqueness is the central problem for managing projects:

1. Because the goals and context of the project are unique, planning and definition take on an added importance. You get only one chance, unlike operational management where you can refine procedures over time.

2. Because the team is unique, and probably from several departments, management must be less authoritarian and more collaborative. Team-building and group-process skills are essential.

3. Because the process is unique, it is much harder to tell if it is going off the rails; thus ongoing evaluation is critical. Contrary to operational management, where you can usually count or measure a product to provide feedback on the operation, projects can be badly managed for months or years without obvious symptoms. You may not know you are failing until the end, when it is too late.

Project management (PM) is not primarily a body of theory, although theories abound in management literature. Instead, you need to know a few basic approaches and techniques and the discipline to apply them; plus you need quick perceptions of people and situations and you need the courage to change what is not working, whether it is the procedures or the people.

PM is down in the trenches. No project is perfect, either in its day-to-day methods or in its final results, but good project management will ensure that problems are caught and corrected while they are still small. In other words, you won't win all the battles; concentrate on winning the war.

What Is Success?

What does it mean for a project to succeed? Later we will see how to prepare a written statement of goals for the project; clearly one definition of success is that these goals are met. But we have all known cases where formal goals were met but the project was still perceived as a failure, or the contrary case where the project didn't meet its stated goals but everyone was happy with it.

Thus I want to give you this very simple definition of success: **meeting expectations**.

Each of the two words has powerful implications. "Expectations" implies that certain results have been conceived of in the minds of others, and "meeting" implies that these results are delivered. Thus as project manager you must ensure that the right expectations are planted in the minds of your colleagues, and then you must fulfill them.

Let's get a little more specific about expectations. A project is defined by three things: its technical goals, its schedule, and its cost. These three are components of every project, from planning a computer system to building an aircraft carrier.

Now that we have defined expectations in terms of goals, schedule, and cost, we can be more precise about what we mean by success:

A successful project:

1. **meets its goals**
2. **on time**
3. **within budget**

What is the project?

Let me guess that you may be confused at this point as to what "the project" is. If you are choosing a new CMS, which is the real project, the planning phase or the implementation phase? In fact there are two projects here. The planning for the system is one project, and the implementation of the system is another. Often we speak of these as one big project, and often the same people are involved in both, but it is impossible to consider them a single project for this reason: until you finish the planning phase you do not have the knowledge to develop goals, schedule, or budget for the implementation phase, so it cannot be a defined project until the planning phase is over.

This suggests a practical way to scope projects which may have more than one phase: the current project is that part for which you can develop written goals, schedules, and budgets, and one of the goals of the current project will be to gather the information to plan the next phase, which will be a new project.

What if these expectations are not met? Well, there's a problem, but it is not always obvious what the problem is. For example, if there is a cost overrun on a project, there MAY have been poor cost control (failure in execution). But it is just a possible that the original budget was infeasible (failure in planning). Or there may have been technical problems that impacted the schedule and thus the budget. Or external forces may have caused problems. The lesson is that a project can go wrong in many ways, so constant vigilance is required. We will return to this when we discuss the evaluation of projects.

Planning a Project

You may be wondering how project planning relates to the planning discussed in the previous article. The answer is that most planning proceeds in a top-down manner, from generalities to specifics. In the last article we discussed broad questions of stakeholders, project participants, and

scaling the planning to the problem. We hope you acquired a general knowledge of what planning is and how to do it.

In this article, we will be more specific. We will outline the specific steps to plan any project. Although we do not believe in cookbook approaches for the substantive planning, here we are addressing the mechanical aspects of managing projects, which can be generalized to any project.

The following steps will be the initial work of the Planning Team. Whether this is done before or after the kickoff meeting with the Steering Committee depends on your situation. If done before, it provides an excellent agenda for the kickoff meeting, but it may be more politic to focus the kickoff meeting on team-building instead.

Steps In Planning a Project

1. **Project name**

   Let's name our project to give it an identity. This gives the project visibility and credibility both for the participants and throughout the museum.

2. **Statement of goals and objectives**

   Now comes the hard part. You must describe in some detail the goals, schedule, and cost of the project. We suggest that you outline this now, and refine it several times as you perform the later steps.

   There are three keywords to keep in mind as you do this: Realistic, Concrete, Written.

   First, you must be realistic. Don't promise more than is feasible, or you will raise expectations which cannot be met (remember that success is meeting expectations). This applies to the goals, the schedule, and the budget.

   It is easier to be realistic if you are concrete. Don't just say you will choose a new CMS. Instead, say you will evaluate the needs for a CMS, survey the market, perform comparative evaluations (or an RFP), meet with colleagues at other museums, etc. Stating the broad functions of the CMS you are planning will prevent unwarranted expectations that you are not planning for. Likewise be concrete in your schedule and budget.

   Finally, the goals, schedule, and budget must be written. This is your main weapon in combating unrealistic expectations. And make sure the written document is circulated widely, at least to the Steering Committee but perhaps throughout the museum. Otherwise some people will believe you are going to solve every problem they have. A written document is also the best way to get management concurrence on the schedule and budget -- if not formally at least tacitly.

3. **Stakeholder analysis and representation**

   We discussed the reasons for stakeholder analysis in the previous article. Now you must sit down and do it.

   To review, the purpose of stakeholder analysis is to make sure that all relevant needs are considered in the planning. Stakeholders are those persons or groups inside or outside the organization who will be affected by the new system. The previous article suggested some stakeholders you may not think of.

   And don't forget perhaps the most important stakeholder: the future needs of the organization. You must think about what your colleagues 20 years in the future will need from your work. You know what you think about the systems that were implemented 20 years ago; you want to avoid similar comments by your future colleagues! This inevitably raises the issue of standards, which are a way to protect your investment into the future. (We will discuss standards in a later article.)

   The Team needs to ask itself, Who are the persons and groups who will be affected by this system? For whom are you doing the project? Who are the users and how will they use the system? This analysis will later help you make specific decisions such as image resolution.

Finally, decide how the needs of each stakeholder will be represented. Some will be represented by members of the Project Team, some by the Steering Committee. Others can be brought in during testing or prototype evaluation, focus groups, etc. Some may need representation only at certain stages of project.

4. **Technical approach**

How will the project be done? Will you do a pilot project? Build a prototype? Use contractors? Develop an RFP? What tools and methodologies will you use? Formal or informal? What constraints apply? How will you test/implement? What documentation is required? What implications will the project have for the organization?

Obviously these questions depend on what kind of project you are planning. You will not be able to answer them all in a single meeting, but they must be answered before you can develop a schedule and budget.

5. **Roles and responsibilities**

By now you have probably chosen a project manager. Usually this is based on the job title, so that a CMS project will be managed by the collections manager or registrar.

But we recommend you consider whether there are other roles that should be assigned. For example, if you are the sponsor or main customer of the new system, you are much too emotionally involved to manage the process as well as the content. You have to realize that your success will depend on having open, participatory meetings and encouraging a wide range of opinions. This is far easier if someone else does it. You can't be impartial and committed at the same time -- we're just not built that way.

Thus you may want to designate someone else as the facilitator. The facilitator has these responsibilities: to call meetings, to run meetings, to maintain records, and to arbitrate differences of opinion. His/her primary role is to focus on the process and methodology needed to achieve good planning and a good system.

Ideally, this should be someone not otherwise connected with the project, preferably someone outside the organization. Of course, few museums have the budget to hire such a person. Instead, choose a calm, fair, supportive person to manage the process, leaving the Team free to focus on the technical issues. Needless to say, the facilitator will not be able to participate in the technical discussion as well as managing the process, so it should be someone who is not a stakeholder. It need not even be a museum professional.

Another role to consider is a project librarian, to maintain the immense amount of paper you will soon be accumulating. Usually someone is a natural for this. This is best done by a member of the Project Team rather than a secretary, as knowledge of the Team's work is necessary.

A secretary is another role that can save the Team time. There will be endless meetings, documents to format and copy, travel to other museums, and visits by vendors. Although probably not a full-time job, this is a critical role.

Other good questions about roles concern the record-keeping functions. Who will be responsible for recording meetings? (Normally this should be the facilitator, if you have one.) What about preparing documents? Preparing the monthly monitoring of goals, schedule, and budget? Preparing the monthly presentation to the Steering Committee? We suggest assigning such roles to Team members rather than having the project manager do everything: participation fosters commitment.

6. **Project management procedures**

Because each project is unique, it is not enough to organize it and hope for the best, Instead, the project must be monitored throughout its life. The Project Team must develop ways to monitor progress in all three areas: goals, schedule, and cost.

Schedule and cost monitoring are relatively easy. However, we must emphasize that in order to monitor a schedule, the tasks must be relatively small and discrete. A gigantic task like "evaluate systems" can take six months or more, so is useless in monitoring. Instead, break it down into tasks that take two weeks or less. (The schedule will be based on the Task Plan, discussed below.)

Monitoring goals is much harder, as it consists of making sure the deliverables of the project are of high quality. No simple system will ensure this, but our best advice is the "reality check" discussed in the previous article. You need to look at each deliverable and ask if it meets the goals for that deliverable. (Deliverables are also part of the Task Plan.)

We discuss monitoring in more detail below.

7. **Policy-making procedure**

   As you proceed with the project, you undoubtedly will face situations where new policy is needed or old policy must be modified. You need to think about how to handle these situations. The most logical way is to put policy issues on the agenda of the monthly meetings with the Steering Committee. This is one of the primary roles of the Steering Committee, and discussions of how the new system will affect policy not only benefit the project, but keep it everyone informed.

8. **Evaluate cost, benefit, and risk**

   Before you proceed to the most detailed level of planning in the next step, you need to evaluate the feasibility of the project. By this time you know what you plan to accomplish, and have some idea of the schedule and budget requirements. Now you need to see if the project should be done as you have designed it, or whether it should be redesigned to increase the likelihood of success. This is a major topic that we discuss in the next section.

   Depending on the outcome of the feasibility study, you may need to go back to step 2 and revise the goals, then proceed again to steps 3 through 8. Continue iterating until everyone agrees the project is feasible as designed.

9. **Develop Task Plan**

   Once you have successfully concluded step 8 (which may take several iterations), the final step in defining the project is to develop the Task Plan. This starts out as a list of tasks to be done in order to complete the project. Then each task acquires the following additional details: task descriptions, its dependencies on other tasks, start and end dates, deliverables, who is it assigned to, and budget. We recommend that every task have a written deliverable; even if the task is something like site visits, a document is often appropriate to serve as a summary of the results of the activity.

   Clearly this is a job that software can help with, and any of the PM software packages will serve. Software is especially recommended to study task dependencies. Be prepared to devote several days on this process to do it right (yes days; the more you work on it the more you will learn about the project). You will definitely receive some surprises if it is done thoroughly. Some of these surprises may require the Team to revisit steps 2 through 8 all over again.

   PM software includes ways to evaluate workload, so you can see whether anyone is being asked to work more hours than there are in a day. We have found this feature completely useless in planning professional workloads. It is just not possible to determine ahead of time how long professional tasks will take, and how much time professionals will have available. Instead, use your judgment in avoiding impossible deadlines.

   Do you remember we said earlier that you really don't have to know what you're doing, as long as you follow a good methodology? This iterative technique is the methodology that will enable you to plan your project well. It will take far more time that you think it should, perhaps even weeks, but there is no shortcut. When you finish, you will be amazed at the degree of understanding you will have, and how little you knew before you did this.

Evaluating Costs, Benefits, and Risk

A central question for management is, "How do we know the project is worth doing?" This is somewhat different from the question we have been focused on up to now, "How can we make the project succeed?" In other words, we are shifting our attention from ensuring project delivers good results to ensuring its results are worth delivering. This evaluation is step 8 of the procedure outlined above.

Presumably if you have reached step 8, management has decided that the project is indeed worth doing. In museums these decisions are usually reached without any formal analysis of the type we are discussing. However, your job as project manager is to ensure that the project delivers maximum benefits with minimum costs and risks. Thus you can use this analysis to answer the question, "How can this project be as valuable as possible?" By analyzing the **benefits, costs, and risks**, you can redesign the project for maximum value.

Benefits

In benefit-cost analysis (also called cost-benefit analysis), benefits are of three types:

1. Monetary -- These are benefits that can be translated into dollars. Examples are sales of a product, savings in staff time, savings in rented floor space, increased donations.

2. Measurable -- These are benefits that can be counted but not translated into dollars. Examples are website hits, visitors, objects conserved.

3. Intangible -- These are benefits that cannot be counted. Examples are educational benefit to visitors, prestige, quality of collection, use of standards.

When describing a project's benefits, I recommend you describe them in these categories, in this order. Thus you will develop a reputation for being both hard-headed and seeing the big picture.

Costs

As with benefits, costs can be monetary, measurable, or intangible. However, unlike benefits, only the dollar costs are normally of interest to museums.

Monetary costs can be direct or indirect. Direct costs are the salaries, equipment, and other costs that are specific to the project. Indirect costs are things like utilities, administrative costs, and others that cannot easily be calculated for a single project. Usually these are quantified by taking a percentage of the direct costs. In museums, direct costs are usually the only ones considered.

Risk

One of the most important aspects of PM is knowing how to configure a project to reduce its risk of failure. Over the past several years, Systems Planning has been developing a model for the evaluation of technology-based projects. The model consists of six factors that you must consider when determining the risk of a specific project.

The three-legged stool

We assume that you have by now outlined the benefits, costs, and risk of the project. What do you do with this?

Benefits, Costs, and Risk are three legs of a stool on which a project must balance. While the relationship between costs and benefits may be obvious, the effect of risk is less so. High risk must promise high rewards, in management as well as in investment.

This can be more formally stated as the following rule:

As the benefit/cost ratio increases, risk is correspondingly more acceptable.

Thus reasonable efforts should be made to increase the benefits, lower the cost, and lower the risk. Consideration of the three together can help determine how to adjust a project to be more acceptable. For example:

Problem	**Obvious solution**	**Another solution**	**Another solution**
Costs too much	Reduce cost	Increase benefit	Reduce risk
Too risky	Reduce risk	Increase benefit	Reduce cost
Too little benefit	Increase benefit	Reduce costs	Reduce risk

However, it is possible to go too far with this. By trying to increase the benefits more than reasonable, there is a risk of the scope of the project's getting out of hand. Reducing costs too far can lead to inefficiencies (such as not having clerical support). Reducing risk too far can compromise the goals of the project.

An example of reducing risk too far is this. Obviously it is less risky to use older technologies than newer ones. But reducing risk by using only old technology may lead to inefficiency. New tools are developed because they permit more benefits to be achieved per unit cost. To take an obvious example, the labor cost of entering data into a database is about the same as (or even less than) typing the data on slips of paper, but the database provides benefits the slips do not. So be aware that using old technology may mean you have tried to reduce risk too far. A good rule is to use "current" technology (neither old nor new) for your major systems.

As said before, the greatest benefit of all comes from doing the analysis, no matter what use you make of it. Further, we want to emphasize that management judgment is always required when using these kinds of numerical scores to make decisions.

Monitoring

There's no substitute for periodic formal review of the project, in which the project leader or Team spends some time reviewing the progress toward the goals, the schedule, and the budget. The focus should of course not be on assigning blame but on identifying problems and solving them. Look for root causes of problems and try to prevent them in future (for example, non-attendance at project meetings may be causing communications problems).

We suggest you use the risk factors to evaluate causes of problems and find solutions. For example, if decisions cannot be made, or communications problems are taking most of the Team's time, or meetings are impossible to set up, perhaps there are just too many people involved. By looking at the risk factors, possible solution may suggest themselves. Perhaps you have a long-linked activity and should redefine the project to be intensive? Perhaps your Team lacks sufficient experience and you need to hire a consultant or get a different one?

To monitor the deliverables, perform the "reality check" described earlier. (We hope you defined a deliverable for each task, as recommended in the Task Plan.) During the review, the Team should ask itself, Did this deliverable meet the needs? Again, the goal is not a simple yes/no answer, but a search for patterns of problems that can be prevented. One good warning sign is deliverables that are never quite complete. Certainly we have often recommended going back to redo steps in the planning where necessary, but on the other hand, incomplete products can hamper success. For example, if you never complete the analysis of users of the system, you will not be able to have confidence in your requirements statement.

Monitoring the schedule is rather hard also. It requires prediction of schedule implications based on the present state. The more you have broken tasks into small parts, the easier this is. Ongoing use of the project-management software is an excellent way to predict schedule problems, as it will recalculate the completion date based on actual progress to date.

Monitoring the budget is easier, because everyone understands money. We know a dollar is not flexible, but somehow we feel a week is!

Remember, the purpose of monitoring is not just to compare progress against expectations, but to identify and correct problems. We used the example above of a cost overrun, which could have resulted from poor cost control, poor planning, technical problems, or external forces. A similar list of reasons could be made for schedule problems or problems with deliverables. In each case, the Team should identify the root causes (not the symptoms) and brainstorm ways to prevent the problem in future.

Final Evaluation

The evaluation of the project, once complete, is not for the benefit of the project, but for you as a project manager. It is part of your education.

The final evaluation should be done in private: its purpose is to learn, not to assign blame. Write down what went right, what went wrong. Then find reasons for these. How could problems have been reduced? Could planning have been better? Could risk have been reduced? Could monitoring have been improved? Was the planning/monitoring scaled to the project correctly?

Part 3: Technology

Now we are ready to look at technology -- the target of all the planning and preparation described in articles 1 and 2. As you probably can guess if you have read the preceding articles, I am not going to recommend specific products or technologies, but to provide you the wherewithal to make your own decisions. We would rather teach you to fish than give you a fish!

The Six Risk Factors in Technology Projects

Technology projects, unlike most others, have a potential to fail to meet their goals. Over the past few years we have isolated six factors that influence the risk of failure.

Factor 1: Achievable goals

Failure is defined as "Results not meeting expectations". Excellent results can still fail to meet expectations, if the expectations are too high or too vague. Thus it is important to specify realistic, concrete, and written goals in order to guide the project.

As important as achievable goals are well-defined goals. They should as explicit and precise as possible without being limiting. In order clarify expectations, goals must be defined in 3 areas: technical, schedule, and cost.

The most obvious example of well-defined goals are systems that are a 1-to-1 replacement for existing systems. This never occurs, however, since a new system always has additional goals.

Other ways of looking at whether goals are achievable is to consider their size, their complexity, whether they are replacing more than one existing system, how stable is the process being automated, numbers of interfaces with other systems (or this may be part of factor 4), and stability of requirements.

The total duration of the project might give a clue also. Projects that take more than one year are automatically higher risk.

Factor 2: Activity type

The activity for which the technology system is targeted is a factor in the probability of success.

Activities can be placed into a 2x2 matrix according to whether they are Critical or Noncritical to achieving the mission, and whether they are Focus or Nonfocus. Focus activities are those for which the organization was founded and those the staff are specialists in.

Factor 3: Resources and commitment

Resources include money and people, but might also consider computer systems, space, etc.

Factor 4: Organizational setting

Organizational Setting describes to what extent the proposed project requires cooperation and interrelationship between organizational units. In organizational theory, there are three ways that organizations can be affected by their technologies. "Long-linked" technologies imply close coordination among departments, especially time-dependent coordination. "Mediating" technologies are common standards and practices. "Intensive" technologies don't imply relationships between departments but individuals focusing on the problem at hand.

Long-linked technologies are the most costly and hardest to change; intensive the least costly and easiest to change. In other words, the riskiest projects are those that require close, time-dependent interactions among organizational units. The least risky projects are those that are done by a small team of specialists, apart from the main organization. Other organizational considerations are the policies in place, methodologies (for planning, analysis, systems development), an information architecture, etc.

Factor 5: Project participants

The most important aspect of the project participants is their experience in the use of the proposed technology. Low experience means high risk.

Other aspects are their commitment to the project, their skills, time, attention available, and their attitudes.

Appointment of a single project manager who bears responsibility for success is also a factor.

Factor 6: Technology age

Technology Age describes whether the technology proposed is New, Old, or Current. The newer the technology, the higher the risk.

One might also consider the availability, quality, staffing, and stability of the infrastructure, such as databases, data administration, languages and tools, networks, etc.

Factor	Scale	Score
Factor 1: Achievable goals	High achievability	1
	Medium achievability	3
	Low achievability	5
Factor 2: Activity type	Critical Focus	3
	Noncritical Focus	1
	Critical Nonfocus	5
	Noncritical Nonfocus	3
Factor 3: Resources and commitment	High	1
	Medium	3
	Low	5
Factor 4: Organizational setting	Intensive	1
	Mediating	3
	Long-linked	5
Factor 5: Project participants	High experience	1
	Medium experience	3
	Low experience	5
Factor 6: Technology age	Old	1
	Current	3
	New	5

Each of the six factors is scored from 1-5, with low numbers indicating low risk. Scores are then added. Total scores can range from 6 to 30. Our experience is that scores over 15 are risky, and over 20, extremely. Scores of 10-15 are feasible. Scores 1-10 may indicate that the project's so low risk that it may not accomplish anything worthwhile. The purpose of scoring the risks is not to find a number, but to look for areas where risk can be reduced without compromising project goals. For example, here are ways risk can be reduced for each of the factors.

- **Factor 1: Achievable goals**

Reduce risk by clarifying goals. If the clarified goals are too ambitious, they can be scaled back or the schedule lengthened. This is what will happen if the project starts to fail, so it's better to do it at the outset.

- **Factor 2: Activity type**

Avoid projects in Nonfocus areas, since they are not what your organization is about. In other words, concentrate your efforts where you have expertise. To avoid the high consequences of failure in Critical Focus activities, experiment with new technologies in a Noncritical Focus activity first.

- **Factor 3: Resources and commitment**

Ensure sufficient resources and management/organizational commitment.

- **Factor 4: Organizational setting**

Do not try out new technologies in long-linked settings for two reasons: first, these usually involve many areas of the organization (and thus are usually Critical Focus activities also); second, long-linked systems are hard to change, so are not suitable to experimental approaches. Instead, develop pilot projects (Intensive). After a pilot project two factors have improved: you know more (Factor 5) and the Technology is older (Factor 6).

- **Factor 5: Project participants**

The obvious way to increase Experience is to hire staff or consultants who are familiar with the technologies employed. If this isn't possible, then give the team what they need to increase their understanding of the technologies.

In addition, do not neglect the attitudes of the project team. These are improved by giving the project importance through management commitment, by giving the team time and resources to work, and by other normal management practices.

Finally, keep the project team small. Seven or fewer members is sufficient. Team members can be added or dropped depending on the phase of the project. Avoid at all costs adding team members for political reasons, which will only delay the project and frustrate the team.

- **Factor 6: Technology age**

Risk can be reduced by using Current instead of New technologies. Or projects can be delayed until the technology is proven. (This depends on whether your organization wants a risky R&D project or a less risky operational system.)

By these means it may be possible to reduce the total risk by 5-15 points without compromising the goals of the project.

Technology and Time

Technology is related to time. A specific technology is invented or developed at a point in time, it spreads over time, and eventually is becomes obsolete. Because of this, a technology cannot be evaluated except in relation to time. Its value, suitability, purpose, and even glamour are all related to the time at which the assessment it done. Thus it should come as no surprise that one of the six critical factors in evaluating a technology project is the maturity of the technology, which I classify as Old, Current, and New.

Using New technologies increases the risk that a project will fail. Some of the reasons for this are:

- It may not work. Oddly enough, some new technologies do not work at all. More likely, a new technology may not work in a specific situation -- it may be too new to have been tested in a variety of organizations.
- It may be eclipsed by improved versions using different interfaces or standards.
- The first vendors of a new technology will not have good support networks right away, for training and maintenance.
- Vendors may go bankrupt or withdraw the product if it is unprofitable. This can occur even with Current and Old technologies, but is less traumatic for buyers in a mature market with standards.
- It will cost more in the first few years.
- Last -- but the most important to managers -- new technologies are unpredictable in value, cost, and implementation time.

On the other hand, an organization cannot simply resist all new technologies in the hope of avoiding risk, because reducing risk by using only Old technology leads to inefficiency, which is just as bad or worse. New tools are developed because they permit more benefits to be achieved per unit cost. To take an obvious example, the labor cost of entering data into a database is no more than that of typing the data on slips of paper, but the database provides benefits the paper does not.

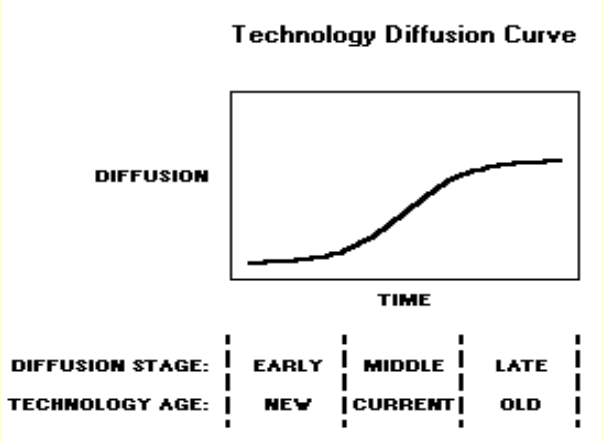
Remember, the ultimate system will never arrive, so don't justify inaction on those grounds.

It should be clear by now that the decision to use any given technology is dependent on its age, and thus the decision will change from year to year. In other words, there is a continual obsolescence going on, in which a technology that is now New may be Current in a few years and Old a few years after that. In reality, the pace is not that fast; most technologies take about ten years just to move from the laboratory to the market, and another ten years to become Current.

Since technology is always changing, there is a continual danger of falling behind the curve (literally, the sigmoid curve). No organization can afford to stop making decisions about adopting technologies for long. Catching up means making much bigger steps than staying current, and thus higher risk. Instead, I recommend that museums except for the smallest continually experiment with new technologies in pilot projects (that is, in

Technology Diffusion

Another way of looking at technology age is the diffusion of technology. "Diffusion" is the economics term for the spread of technology through its potential audience. Technologies diffuse according to a sigmoid (S-shaped) curve, like this:



As you can see, technologies diffuse slowly at first (when they are New), faster when they are Current, and slowly again when they begin to saturate their intended audience.

Noncritical Focus activities using the Intensive approach -- to use terminology from "Risk Factors in Technology Projects" cited above). This is the best way to stay current and to make decisions about what is suitable.

To say this another way, here are some guidelines:

- Use stable (Current) technologies for Critical and Long-Linked activities.
- Experiment with New technologies in Noncritical activities and using the Intensive approach.
- Do not use Long-Linked approaches for Noncritical or Nonfocus activities.

Technology Assessment and Strategy

I recommend that museums have a long-range technology plan, based on the museum's strategic plan. This plan will outline the technology strategies and policies to be followed over the subsequent ten years or so.

One method of generating such a plan is my company's Strategic Technology Plan, or STP™, a methodology that provides a framework for decision-making. For example, an STP can help ensure the CMS is part of your overall technology strategy. The STP provides a systematic approach to studying the museum's data, existing technology, priorities, and policies, and results in a year-by-year implementation plan. For more information, see "A Rapid Method for Information Planning".

Of course, the STP is only one approach to developing a long-range technology plan. The important point is to do the planning and to have a plan. However, I do not believe that a museum with no experience in this area should undertake such planning without a consultant who has experience in this specific area, as it is easy to spend a great deal of time (years, in some cases) gathering information and then not be able to make use of it.

Having a long-range plan (whether for technology or anything else) does not mean you must then undertake crash projects that change everything at once. I have seen this approach fail too often to recommend it. On the contrary, my philosophy is, "Plan globally, implement incrementally." By having a long-range plan, you can then implement pieces of it over time with the confidence that they will all work together in the end. Without such a plan, you will probably make decisions that result in incompatible technologies, systems that do not meet long-range needs, systems that are replaced too soon, and other costly problems.

Standards and Policies

Standards are one of your best strategies for risk reduction and cost reduction.

Museum people generally well understand the value of standards in risk reduction. Most museums would not consider buying a CMS, for example, that did not run on a standard computer platform, or that did not use a standard type of database management system such as relational. These are strategies to ensure that you can salvage part of your investment if the vendor stops supporting the product.

Standards can also reduce costs, such as the cost of converting non-standard data. Museums last far longer than computer systems, so the cost (and pain) of data migration every five or ten years can add up to a lot of money. Fortunately, museum data tends to be fairly stable; I have seen

19th-century hand-written accession ledgers at the Smithsonian that contained similar data to that collected today.

Standards can also help you take advantage of future developments in technology. For example, if an excellent image-compression technique is invented five years from now, will you be able to use it? If you are using a standard image format now, there will certainly be conversion between them. For a proprietary format, maybe not.

National and international standards

Although I am a great believer in standards and their value to the community, you do not have to become a great standards expert in order to acquire a CMS. This is because relevant standards tend to become incorporated into the CMSs on the market. Fortunately, our field has become mature enough to support standards work by those who are interested, which benefits us all.

include in this section not only standards approved by the official standards bodies, but also those developed by noncommercial bodies with a national or international focus.

Here are a few standards you should know about:

- Most important and most widespread are the Getty vocabularies -- the Art & Architecture Thesaurus, the Union List of Artist Names, and the Thesaurus of Geographic Names. You may know them by their acronyms AAT, ULAN, and TGN. These have been the work of more than a decade, by hundreds of experts using thousands of reference sources. They are the best source of authoritative terminology for most museums.

- The Getty has developed or collaborated in many other standards projects. For example, the Categories for the Description of Works of Art (CDWA) outlines in detail all the kinds of data needed to describe artworks. (This page also lists some of the excellent pamphlets the Getty has published on metadata, imaging, and other topics.)

- The Dublin Core (named after Dublin, Ohio) is a set of core data elements to describe documents, especially web documents. The value of these fifteen core "metadata elements" is that they are more or less applicable to every artifact, including those that are not documents. This has given rise to "crosswalks" that map between the DC and other metadata standards, like the CDWA, the Machine-Readable Cataloging (MARC) format used in libraries, and others. The CIMI consortium is studying its applicability to museum objects in a multi-year project.

- Hypertext Markup Language (HTML) is one you probably know about already. It's the standard language for encoding pages for display on the World-Wide Web. It has many variants and versions, including Dynamic HTML (DHTML) which permits users to interact with pages to some extent (as do several other technologies). Extensible Markup Language (XML) is another way to code pages for the web and for other purposes. Its value is that the meanings of the codes are transmitted along with the page, so it is highly flexible. XML is getting a lot of press, but has not yet become a mainstream technology (it is still New technology with the concomitant confusion and risk).

For comprehensive lists of standards, see the CIDOC website and that of the Museum Informatics Project at the University of California, Berkeley.

Industry standards

In contrast to national and international standards, industry standards arise from commercial interests. Actually, the motivation of both kinds of groups is the same -- to improve interoperability and efficiency. In fact, many national/international standards, such as ASCII and JPEG, began as industry standards.

Industry standards usually begin with a single company's need to solve a problem. For example, the GIF picture format was invented by Compuserve in order to compress images for transmission to its users. Other companies, either collaborators or competitors, adopt the solution for marketability reasons. Quite often competitors will modify the solution somewhat to gain an

advantage, or just because they see room for improvement. When it reaches the point where the various solutions are incompatible, there is usually some move to reach agreement in order not to alienate the market. Thus an industry standard is born.

The early stages of rapid improvement are beneficial in the long run, although confusing to those who must cope with incompatibilities. It is worse when a technology is frozen into a standard too soon -- it may never be developed to its full potential. (The QWERTY keyboard and the VHS videocassette are often cited as examples of this.)

There is a looser meaning of "industry standard" that is gaining currency. Marketers now speak of their products using an "industry standard database," meaning only that the database uses the relational model. The problem is there is no industry standard for relational database management systems, so the term has very little meaning when used that way. (There is a theoretical definition of "relational," but no widely used database management system implements it completely.)

Although you do not need to be an expert in industry standards, it is hard to have a discussion about systems without using names of standards, so some familiarity is helpful. The easiest way to get this knowledge is to subscribe to one of the mass-market computer magazines, like PC Magazine.

Internal standards (Policies)

Despite all the standards discussed above, there is still need for internal standards, otherwise known as policies. Policies will affect the daily work in the museum more than the broader standards already discussed.

How can policies help? Here are two sentences from the imaging policy of a client museum:

- Images will be stored in lossless or near-lossless form.
- The full-resolution unedited scan is saved indefinitely.

Policies like this ensure that imaging projects throughout the museum will have long-range value. With the addition of policies about resolutions, color bit-depths, and other technical details, the results of various imaging projects over the years will be compatible with each other.

Policies are not simple or inexpensive to develop -- just simpler and less expensive than having no policies. To stick with the imaging example, consider the costs of rephotographing objects or rescanning photos if the original work was not of sufficient quality -- not to mention the wear and tear on the objects.

Policies must be put in place fairly early in the life of a technology, and must be monitored and enforced. Although it is obvious that a museum-wide program should follow policies, it often happens that a project that starts as an experiment becomes the foundation for a museum-wide program. Early development and monitoring of policies can ensure that even the experiments take heed of the future and their technology decisions can be justified in terms of long-range strategies. Policies need not restrict creativity and experimentation, but they should differentiate between experiments and mainstream activities.

Policy development is really a planning process. I suggest you review my suggestions on planning in article 1, especially about stakeholders. For a policy to succeed, it must have the "consent of the governed," otherwise it will be ignored; thus it is essential to ensure that all points of view are considered and incorporated.

Technology policies should address the specifics of implementation, even mentioning products when appropriate. Naturally this means they must be periodically reviewed and revised. Sorry -- there's no quick and dirty solution here!

Here is an example of an actual imaging policy whose development I led for the Los Angeles County Museum of Art, which has kindly allowed me to use it here. I have added notes and explanations to the policy to point out the important features. The original policy was developed in four two-hour meetings over a period of a few months, with some email discussion between meetings. There were about seven persons working on it, including representatives from a curatorial department, education, information technology, photography, and visual resources. As you will be able to see in its revision history, the policy has been revised several times as the museum has responded to new needs and new technologies.

Vendors

Perhaps you've heard the saying, "Borrow a thousand dollars and the bank owns you. Borrow a million dollars and you own the bank."

Because all vendors of CMSs are small businesses, this principle colors the entire relationship between a vendor and a museum. Put another way, a major contract can affect a vendor's entire business. It is important to remember that the largest CMS vendor has around fifty staff, and one of the major vendors for years had exactly four. And none of them are getting rich as in dot-com rich.

The vendors are small because the museum systems market is small. There are only tens of thousands of museums in the world, and in any given year, probably only a thousand or so are looking for a CMS, and only a few hundred will purchase one. That's not many customers to go around, compared to the number of customers of the companies that shape our unconscious ideas about business, like Coca-Cola, Sony, General Motors, and IBM.

Because the market is small, the most productive attitude is one of collaboration. Adversarial positions are bad for you, the vendor, and the community. For example, to require large financial penalties that if invoked would drive a vendor out of business makes little sense. You certainly won't get your system running that way, and no one else will either.

On the other hand, many vendors take a very casual attitude to their client's schedules. Lying about delivery dates is not unknown. This is deplorable, and while an adversarial approach will not work, I do not advocate being soft either. Vendors with such attitudes should be avoided until they change their ways. Check with your colleagues about their experiences. If you feel you must use that vendor's system despite the scheduling uncertainty, at least you will do so by choice.

In other words, you are adding the scheduling uncertainty as one of the decision factors, and evaluating it along with the technical features, cost, and other factors.

I do recommend financial penalties be written into the contract to be administered when the vendor is clearly not working on your system or data. Such penalties will cause vendors to plan their workload and staffing better than some do now.

The size of the penalties must be calibrated to inflict pain, but not ruin. Five percent of the contract amount for each month's delay up to a maximum of 25% is a good guideline; after five months you may want to cancel the contract anyway. The contract should make very clear under what conditions the penalties will apply, and these conditions must be fair. I’s no good blaming the vendor if the museum has delayed the project through its own disorganization or poor planning.

Museums must also realize that vendors have to make money. I heard a story from one vendor who was asked to make three out-of-town visits to sell a $1000 product. This obviously doesn't make sense from a business point of view -- the cost of a single trip would be more than the purchase price. This is a hard attitude for some to understand who have worked in penurious non-profits all their careers. But remember, a vendor who is not making money may not be around next year to provide you with the systems you need.

Data conversion

The most unpredictable aspect of implementing a CMS is data conversion. The other steps in implementation, like delivery, installation, and training, can usually be scheduled with a few weeks notice, but data conversion is a highly specialized and complex task. The vendor may have only one person or a few qualified to do it, and for a large museum the work can take six months or more.

Data conversion by its nature is unpredictable, and speed can be the worst enemy of quality. It takes time to study each data element and the range of values, and to develop algorithms to standardize it. In other words, the slowest vendor may give you the best database in the end. Do not sacrifice the long-term value of your data in order to get running a month sooner.

Buzzwords

Buzzwords are the common currency of technology. If you don't understand them, you almost cannot communicate. On the other hand, like well-worn currency, buzzwords fade and blur over time; and the longer they are popular the less meaning they have. Terms like "object-oriented," "interactive," "metadata," and "web-enabled" have dozens of different meanings.

Thus buzzwords are not a reliable way to choose technology products. Besides the lack of precision, you will soon discover that vendors who hope to stay in business will find some way to describe their products using whatever the current buzzwords are. However, if you need to know a buzzword, here are some good sources:

- Whatis? provides a huge number of definitions and much related information
- Webopedia provides definitions plus links to relevant sites

Procurement Process

So if buzzwords are not the way to choose products, what is? As you may imagine if you have read the previous articles in this series, the answer is to use a good process and to put experienced people on your team. The truth is, it is far more important to know your organization's real requirements than anything else.

I have discussed the planning process in article 1, and the project-management process in article 2. These are the preparation stages for the procurement process, which has your statement of requirements at its core.

The purpose of a competitive procurement process is three-fold:

1. It forces you to do thorough planning to develop the requirements.
2. It is an impartial, requirements-based method for choosing a system.
3. It helps negotiate a fair contract.

Readers from government and university museums are probably familiar with their own organization's procurement process. They will also probably be required to work with a procurement office when buying systems. This is usually a help, although disguised as a hindrance. For one reason, the procurement office will insist on an objective, competitive procurement process, which is to your benefit. Second, there are many details to be specified when acquiring a system, such as installation, testing, and maintenance, and the procurement office probably can help with these.

Now I have to introduce some acronyms: RFP, RFB, RFQ, and RFI. These are various ways of asking vendors how a problem could be solved.

RFP stands for *Request for Proposals*, and is a document describing your problem which is sent to companies to ask them to submit proposals for how they can solve the problem. Some organizations use the terms Request for Bids or Request for Quotations instead. The RFI -- Request for Information -- is a bit different. It does not ask for formal proposals, but only for information. It is usually used early in the process of trying to solve a problem, especially one that is hard to describe in terms concrete enough for an RFP. Normally to acquire a CMS, only the RFP is required.

The major steps in a competitive procurement process are these:

1. Develop the requirements.
2. Write the RFP, with the requirements as its core.
3. Send out the RFP.
4. Evaluate the proposals using an objective, quantitative method.
5. Negotiate with the top few bidders. This will focus on terms and schedules, as well as complex technical matters such as data conversion.
6. Award a contract.

Parts of an RFP

The next article outlines a sample RFP.

Evaluating proposals

Usually you want to make a decision quickly, usually within a few weeks after proposals are received. So the evaluation team should be scheduled and meetings set up for this ahead of time, based on the procurement timetable. You should be aware it can take half a day just to read a single proposal, and at least that long to score it and discuss it, plus more time to compare proposals and make a decision. A week is not unusual to evaluate three or four proposals.

The procedure is for each person to read each proposal, scoring it by themselves. Then the group meets to compare impressions and scores, and consolidated scores are developed. This helps bring to light any misunderstandings. There will probably be a need to get clarifications from vendors.

Proposals that are obviously "non-responsive" need not be scored in detail, for example, if a mandatory requirement is not met, or if critical information is missing.

After the consolidated scores are developed, the weights are applied to come up with a total score for each proposal.

The reason for a numerical process is to eliminate factors like lobbying and personal relationships from the decision. It is as objective as any human process can be, especially if the committee contains a variety of points of view (but five is enough members). So what happens if the

top-scoring proposals don't agree with your gut feelings? This means something went wrong in the RFP development -- requirements overlooked, weights assigned wrong, etc. The best cure for this is prevention. While developing the requirements, you have to be devious in thinking about the implications of each one, making sure the requirements don't make any assumptions, how to prevent vendors from being ambiguous, how to verify what vendors tell you (by thinking of points for the demo), etc. It requires a mind like a lawyer's, to think of all the ways around a question and how to prevent them.

As you probably realize by now, a competitive procurement is a lot of work, but it is far better than acquiring the wrong system. It should be kept in mind that it is a lot of work for bidders too, so keep requirements few. It is better to receive for full explanations of a few dozen requirements than sketchy information on hundreds. Allow bidders sufficient time to prepare the proposals. Thirty days is the usual time, but that is just barely enough, since a thorough proposal may take an entire week for an experienced employee.

Part 4: Sample RFP

Here is an outline of a simple RFP.

Introduction

Purpose. Here you briefly state the problem you are trying to solve; details will come later. For example, the Purpose might be "To provide a computer system for the ABC Museum to support its registration, collections management, curatorial, educational, conservation, and exhibitions functions. The system must include a public web interface to the database of museum objects." You should also indicate the size and complexity of the problem, such as the collections to be managed, the number of objects, the number of museum departments and buildings, remote locations if any, and unusual functionality required. This helps vendors to know if their systems are at least in the ballpark without having to read the entire RFP.

Scope. The purpose of this paragraph is to tell the bidders what kinds of deliverables they would supply: software, hardware, networking, services, etc. This is a good place to state whether custom development is acceptable or whether you require an established product. The duration of the proposed contract goes here too, although for CMS procurements, this isn't required unless you are proposing a partnership or other close relationship.

Multiple awards. "Award" is the term used in procurement to mean the acceptance of a proposal. State here whether you will you be awarding a contract to a single vendor, or will vendors be asked to work together. Also indicate whether vendors may submit joint proposals, for example if one company supplies the system and another provides support and training.

Timetable. Indicate desired implementation schedule. There'll be a detailed timetable later also.

How to Submit Proposals

This section outlines the rules bidders must follow as they prepare their proposals. Here are some suggested rules.

- Bidders must answer every question
- Bidder must submit separate technical and cost proposals. This is because the technical evaluation is more objective if done without knowing the costs. Therefore the cost proposal should be bound separately so it can be hidden from the evaluation team until the technical evaluation is finished (this includes you!). The costs are then factored into the technical analysis to arrive at a final score.
- In the technical proposal, bidders must, for each requirement, indicate whether they meet the requirement fully, partially, not at all, or plan to in future. You should indicate what codes bidders can use to indicate these. In addition, for each requirement, bidders should describe the method or approach they use, and what they mean by "partially."
- Bidders must supply information about the company and its clients, products and services. Of particular interest is a list of museums which have installed the vendor's CMS. The RFP should require that the bidder indicate which existing installations use the same system they are proposing for your museum.
- Indicate where to send proposals, number of copies, due date. State that late proposals will not be accepted.
- Describe how vendors can get clarification on the RFP, such as that questions from vendors must be received within 15 days of the date of this RFP, and that responses will be sent to all vendors within 48 hours (this keeps the playing field level).
- Cost proposals must show all costs, both startup costs and annual costs for each year of the contract period. Any optional items should be clearly identified. Because costs depend on the size of the system needed, you will need to provide a "costing scenario" that the bidders are required to use. This is discussed below.

Requirements

The statement of requirements is where the problem is described in detail.

Requirements are of two kinds: Mandatory and Desirable. Mandatories are those requirements that the system

absolutely must have or you cannot use it. A proposal that does not meet the Mandatory requirements need not be considered further.

Desirables are the requirements that will be used to compare the proposals. If you imagine you and your team sitting around a conference table trying to understand how several different systems implement a certain functionality, you will realize that simply asking bidders to answer yes or no to requirements will not help much. That is why I specified above that bidders must describe the method or approach they use to meet each requirement.

The most common mistake made is to have too many requirements. If you have hundreds of Mandatories, no system will meet them all. Thus you will end up re-evaluating which Mandatories are really mandatory. It is better to do this as the RFP is written. Mandatories should be limited to essential points of architecture, functionality, and scalability. To do otherwise only limits your choices, which are already very few in this market.

For example, you may feel that the system absolutely must handle your images of a certain size or format. However, it may be that converting the images will work just as well, and not limit your choice of system. In other words, try to state your problem, but allow the bidders to propose solutions. This will generate a lot more alternatives to choose from. To specify the solution instead of the problem just reduces your options.

Here are some examples of what might be Mandatory requirements:

- System must be able to handle your existing content. List here the numbers and formats of data and media to be handled. How many now, how many eventually, and typical sizes. The expected maximum numbers should be given here; in the scenario, probable numbers will be given.
- Existing hardware, networks, and systems the new system must integrate with (describe).
- Use of whatever standards you now employ (list).
- Support of remote locations (give number and distance)

As with Mandatories, Desirables should also be kept few. All too often, it is felt that a program or process that is not represented in the RFP is somehow unimportant. Drafting the RFP turns into a turf battle. Just keep visualizing yourself trying to evaluate the proposals: will you really downgrade a system because you can't change the look of the data-entry screens? What if that system is otherwise the best?

Costing Scenario

One of the hardest parts of the evaluation is to compare costs, because each vendor prices their system using a different formula. Therefore it is up to you to provide a level playing field.

You do this by including in the RFP what I call a "costing scenario." This describes the expected volumes the system must handle (not the maximums), so you can get a realistic picture of what each system will cost each year. The RFP should state that you require that bidders to use the scenario in costing.

The main points for the costing scenario are:

- Expected numbers of records of each type for each year for the first five years, and typical record sizes.
- Expected numbers of images and media for each year, and typical sizes.
- Number of client computers for each year, distinguishing between staff and public computers. Actually, vendors price their licenses by the number of concurrent users, but they can estimate this better than you can if you provide the total numbers.
- Expected dates for the implementation of each major function.
- Number of staff to be trained.

These points enable the bidders to provide costs of the license, the hardware, and the training. Most will also have additional costs, depending on the extent to which they itemize.

One of the largest costs is also the hardest to estimate, or to provide a scenario for -- data conversion. Most bidders will provide a ballpark estimate, based on the number of records you have, but data varies so much that this can be only an

indication. The cost of data conversion is one of the major topics for discussion with the short list of vendors who you negotiate with. At that point they will probably want to see samples of each type of record.

Evaluation criteria

Sometimes the method of evaluating the proposals will be included in the RFP. Whether or not you do this, you should be preparing an evaluation plan as you write the RFP. The plan should be complete and in writing before the RFP goes out. It is as important to get museum-wide agreement on the evaluation plan as it is on the requirements.

Evaluation should be done by numeric scoring; this is your best chance of getting the system that best meets your needs. Generally about 75% of the total points are given for the technical proposal, and 25% for the costs, but this can be varied to meet your needs. You should outline how the points for the technical proposal will be assigned, such as 10% for registrar-ial functions, 10% for public access, etc. (You can assign points to each major area instead of percentages.)

Within the technical proposal, the various requirements will be weighted so that more important requirements weigh more heavily in the decision. That is, there may be eight requirements that make up the registrarial functions; unless the eight are all of equal importance you should weight them (a scale of 1 to 5 is sufficient, 5 being the most important). Weights will be assigned after the technical requirements are written.

As you evaluate each proposal, you assign a score for each requirement. Use scale of 0-5, 5 meaning the requirement is met exceptionally well and 0 meaning it's not met. Then the scores are multiplied by the weights to arrive at total scores.

The cost scores should be based on the total five-year cost of each system. You can ask bidders to supply this number, but you should also calculate it yourself. You give the cheapest responsive proposal the maximum possible points and the most expensive zero points. The others are interpolated mathematically. Obviously this means the bidders must be costing using the same assumptions. That is why you required them to use the costing scenario.

Will demos be required of vendors? Usually this is a good idea for the 2 or 3 top scoring proposals, not for all of them. As you evaluate the proposals, make a list for each vendor of the points you want demonstrated. Part of the demo should be allowed the vendor to show what they think is important, but part should be given to having unclear features clarified.

Finally, talk to your colleagues at other museums who use the systems you are considering. This is the best way to find out about vendors' honesty, reliability, and responsiveness. This is a good way to clarify vague or subjective matters. For example, no vendor will say their system is hard to enter data into, so go watch how it's done at another museum.

Timetable

The actual dates will be part of the contract negotiation, but this gives everyone a framework: List the major dates in the procurement process, such as:

- [some date] RFP sent out
- 15 days after RFP deadline for requests for clarification
- 45 days after RFP due date for proposals
- 30 days after due date initial evaluation done, museum will request demos
- 60 days after due date museum will make award
- 90 days after award system installed
- 180 days after award data converted and loaded

Legal Stuff

Since the RFP and proposal are legal documents, and also become the basis for a contract or license, I'm sure your legal department will want to include boilerplate.

Part 5: Making Decisions

Choosing a collection management system (CMS) is all about making decisions. There is of course the big decision of which CMS to buy, but this decision is founded on thousands of smaller ones. To the extent that the smaller ones are made correctly, the big one becomes much easier. Therefore, make even the small decisions by involving the right people and using a good process.

Groups

Most important decisions in nonprofit organizations are made by groups of people. Therefore knowing something about how people work in groups can be highly beneficial.

As we hinted in article 1, groups have a life-cycle just as people do. The stages that a group goes through are usually given as "forming, storming, norming, and performing."

- **Forming**. The first thing a group must to is "form" itself from a roomful of individuals into a group. The group begins by exchanging information and exploring the task for which the group was formed. There is usually not much substantive result from these initial discussions, but they help the group members get to know each other, help them feel more comfortable, and help each one develop a role in the group.

- **Storming**. This stage is marked by conflict and disagreements. It signals the end of the formal, polite Forming stage. Although no one likes conflict, this stage appears to be in some degree necessary for the group to move forward. Some groups storm over the group's purpose and goals; others over trivia like the shape of the conference table. Although much of this is to establish the roles of the group members, it is still necessary to address the issues and try to resolve them.

- **Norming**. In the Norming stage, the group resolves its conflicts and begins to establish roles, standards, and relationships. The members feel a sense of unity, cohesiveness, and satisfaction. The group is maturing into a unit that can address the goals for which it was established.

- **Performing**. The mature group, having passed through the necessary first three stages, is now producing the results for which it was formed. The group is able to make decisions in a productive and cooperative manner.

Progression through these four stages is a process that can take several hours to several months. A major determinant is the nature of the group's purpose and the clarity of its goals. Vague purposes require a great deal more Storming and Norming before the group can Perform. A group with a very limited, clearly defined goal may pass through the four stages rapidly. This suggests two ways to hasten the group's maturation: by providing it a clear written statement of its goals, and by having the group prepare it if it is not given.

Another major factor that influences the speed of a group's maturation is the interests, background, and social skills of its members. Rather than try to alter the individuals, the facilitator should employ techniques to emphasize their strong points and minimize their weak ones.

Some groups may never reach the Performing stage. It is particularly important, as you may image, to get past the Storming stage. Sometimes a good facilitator can help the group mature, or a change in the group's membership may be required.

I wish to emphasize that these stages are necessary parts of the maturation of any group. Often we hope to avoid the Storming stage by selecting only congenial people. However, groups cannot be made up of people that think alike: if everyone is singing the same notes, the music is not very interesting. In fact, diversity of members' styles has been shown to improve results. So if your group avoids all conflict, perhaps its needs some new blood.

Group Decision-Making

Why all this emphasis on groups? One reason, as we said, is that in museums, most important decisions are made by groups. It's to everyone's benefit that the groups are making decisions in the best possible way.

The other reason is that groups at the "Performing" stage tend to make better decisions than any individual, especially where the problems are large, complex, and unclear. We are more creative, have more ideas, and come to better solutions. Groups can make decisions in many ways.

Here are four good ways to make decisions. Each has its uses, as well as its drawbacks.

- **Autocratic**. The leader makes the decision. This style can result in the fastest decisions, so it is useful when speed is the overwhelming consideration. It is a win-lose outcome for the other members of the group, does not commit them to the solution, and underutilizes their potential to contribute.

- **Democratic**. The majority makes the decision. Can be a fairly rapid process if the group is physically together rather than being a virtual group. Requires a clear statement of the problem. This is another win-lose process. Although the entire group contributes to the solution, those in the minority are not very committed to it.

- **Compromise**. This should be the method of last resort, as it is lose-lose. Everyone gives up something. The decision process takes the path of least resistance, rather than focusing on the problem to be solved. It generates only moderate commitment to the solution.

- **Consensus**. The slowest method, but results in the best decisions. Often not feasible if there is insufficient time or if the group is a new one, as it requires a great deal of honest, problem-centered discussion. Differs from compromise in that it is win-win: everyone agrees to the decision. This results in high commitment to the solution.

As we discussed in article 1, the kind of decision-making process to use depends on the problem to be solved. If the problem is low-cost, without long-term considerations, and can be easily changed (i.e. coffee to buy for staff), make a quick decision using the autocratic or democratic styles. If the problem is high-cost, with significant long-term considerations, and not easily changed (what kind of CMS to buy), you should not settle for anything less than consensus. Because consensus can't evolve in an immature group, a consensus decision not only takes time to arrive at, but it takes time evolving the group to where it works on the problem effectively.

"Consensus results in the best decisions" applies to Technical problems. There is a standard problem in management training that consists of groups selecting which items from a list would be most important to survival in a desert or in the arctic. It's been shown, groups allowing one person, even if expert, to make the decision; make worse decisions then a consensus among non-experts.

Here are some bad ways to make decisions:

- **Decision by Power**. The most powerful member of the group makes the decision without any consultation even though there are other stakeholders. This may be seen as an autocratic process applied inappropriately.

- **Decision by Default**. The decision is made by not making a decision.

- **Decision by Emotion**. The most emotional or most vocal member of the group forces acceptance of a decision.

- **Decision by Fatigue**. The group becomes so tired or bored with the issue that the member with the most staying power carries the day.

- **Decision by Threat**. A group member forces a decision by threatening reprisals, such as to quit the group, to be unpleasant, to withhold budgets, to be subversive.

Managing Group Decision-Making

One way to speed up the evolution of the group is to impose structure and discipline. This is best done by a facilitator, since the structure must be imposed from outside the group.

The most common structure that a facilitator imposes is to separate idea generation from idea evaluation. Since facilitators tend to love aphorisms, they like to say "You can't get hot water out of the tap while the cold water is running."

There are three steps to this approach:

1. Problem definition

Before ideas can be generated, the problem must be clearly defined. It is pointless to generate ideas about the wrong problem. Agreeing on the problem is a good way to have the group begin to work together. As with any problem statement, it should be in writing.

2. Idea generation

Idea generation can be fun, but only if criticism and evaluation are turned off temporarily. No ideas should be criticized during idea generation. Instead, participants should use ideas as springboards for new ideas.

When idea generation is working, group members will build on each others' ideas. Ideas will begin to flow faster and faster. Many of the ideas may be impractical, but they may spark in someone else a really good idea; that is why no criticism is allowed. You don't want to discourage the free association that generates new ideas. The goal is to have as many ideas as possible. The more ideas you have, the more likely it is that you will have some really good ones.

Brainstorming is the best known technique for idea generation, in which participants call out their ideas while the facilitator records them. Nominal group techniques, in which ideas are written instead of spoken, may be more effective in new groups in which the members have not come to the stage of trusting each other.

The flow of ideas cannot be interrupted without harm. It is best to isolate the group, whether the session is half a day or an entire week.

3. Idea evaluation

Idea evaluation requires a different mood and mode of thinking from idea generation. It is left-brained instead of right-brained.

The first step should be to agree on what a good solution would look like. These are criteria that will be used to evaluate the ideas, such as the cost, the timetable, and the degree of risk. One good method of developing criteria is called QFA -- Quality, Feasibility, Acceptability. It recognizes that although ideas may be inherently good (Quality), they may not be doable in your museum for lack of talent, funds, or other resources (Feasibility); or they may be so unpopular or risky in your museum that they could never be implemented (Acceptability). Using QFA as a guide to developing decision criteria helps make sure you are considering not only the inherent value of an idea but the context in which it would be applied.

Next, a matrix is developed with the criteria along the top and the ideas along the left. The cells of the matrix can then be given scores for how well each idea matches each criterion.

As you proceed, new ideas or variations will arise. Add these to the list as well. Obvious stinkers can be removed from the list -- as we said, idea generation will result in lots of ideas that are obviously unworkable. But do not eliminate ideas too fast. The goal is not to emerge from the meeting with one idea or solution; instead, because potential solutions probably will (and should) be reviewed over a period of time by your group or by others, you want to have a range of solutions.

Finally you must perform a reality check. When you think you have selected the best ideas, make sure that they will actually solve the problem. Although I have emphasized the value of a good process, there is the danger that a group can get carried away by the process, so it is also necessary to make sure the results make sense.

Consultants

Most museums use a consultant to help them plan for a collection management system (CMS). This is because a museum may acquire a CMS only once every ten years, so museum staff naturally have little experience with it.

For the same reason that the number of CMS vendors is small, so is the number of consultants qualified to help you with this process. In North America there are only a handful.

What can a consultant do for you? Let's clarify one thing right away. The consultant should not be making decisions for the museum, especially The Decision about the best CMS. It is not good even for the consultant to participate in consensus decisions as one of the team, because he or she may be thought of as someone to whom the others should defer.

Instead, the consultant supplies two things: process and information.

Choosing a consultant thus boils down to assessing his or her ability to assist with the process and to provide information. In other words, the consultant must be able to work with you and your team, and must have current and accurate information, delivered free of bias.

Both of these areas are hard to assess. You can and should evaluate the personal chemistry yourself, as well as the ability to communicate problems, intellectual honesty, and reliability, but references from trusted colleagues at other museums should be part of the process too.

However, like anyone, the performance of the consultant depends partly on the context. For example, if a museum doesn't value planning, the consultant cannot lead the museum to plan effectively. Or if the museum has a pattern of autocratic decision-making, you can't expect the consultant to develop consensus.

Consultants are expensive, so you want to use them where you will get the most return for the dollar. On some projects, a consultant simply gathers data and analyzes it in straightforward ways, but this is the 80 percent of the work that accounts for 20 percent of the value. The more of this you can do in-house, the less you'll have to pay the consultant. The more effective use of a consultant is in applying intelligence and experience to your unique situation; this is the 20 percent that can make the big difference between success and failure. This is what you really need and should pay for.

One problem I see often is that a museum will hire a consultant who is good in certain areas but not for the task they were hired for. The museum doesn't realize the difference, or feels that they are closely related. This is natural -- if you are not a technology specialist you tend to lump together those who are, but in fact technology is a tremendous range of specialties, and is becoming ever more fragmented. Make an effort to understand enough about the problem to find someone with relevant experience.

How to Manage Meetings

There is nothing worse in daily work life than boring, unproductive meetings. And there are few things better than a crisp, well-managed, productive meeting. What's the difference? If you've read the preceding articles, I'm sure you will not be surprised to hear that the difference is planning.

For a meeting, a plan is called an agenda. Seeing the agenda as a plan may help you realize that it must be more than a list of topics. Instead, an agenda should describe the results expected from the meeting. Consider the difference between these two examples:

Bad example

- Introductions
- Equipment budget
- Gallery kiosks
- Next steps

Good Example

- 5 minutes: Introduction of new members Mary Smith and Joe Blow to committee
- 15 minutes: Final decision on 12/15/99 proposed budget for multimedia production studio
- 25 minutes: Discussion of preliminary designs for gallery kiosks. Plans are available for review in exhibits office. Decision to be made at next meeting
- 15 minutes: Review project plan, ensure we incorporated mandates from executive committee's January meeting.

The bad example is just a list of problems or points to be addressed. The good example shows that the context is provided for each topic, and some thought was given to it. In other words, it states the goals of the meeting.

You can see that some thought was given to how much time should be spent on each topic. This is the only way to cover all topics and still end the meeting on time. Otherwise the early topics will get most of the time and the later ones will be Decisions by Default or by Fatigue (see above).

One easy way to improve the value of an agenda is to distribute it before the meeting. Obviously there would be little point to doing this with the "bad example" above, but I hope you can see that if the "good example" reached your desk a few days before the meeting, you would be able to use it to review pertinent documents or to think about what you want to say in the meeting. So a good agenda distributed ahead of time maximizes the productivity of the meeting, because people have had a chance to think about the issues ahead of time. Less time is spent on vague discussion and more on possible solutions. When you distribute the agenda ahead of the meeting, include with it background documents or information. This can reduce the time in the meeting for transmitting information and increase the time available for discussion.

These ideas help the meeting be what it should be, which is face-to-face discussion, not information distribution which can be done by email or on paper. Especially you never want to spend time in a meeting with everyone reading documents -- this is a total waste of time.

The next biggest waste of time is having everyone writing docs. There is no surer way for a group to feel productive without being so. Instead, have 1 or 2 people draft the document; send it to everyone for email comments. You may be able to write the entire thing without any meetings at all.

Summary of Major Ideas from This Series

- Almost every work activity can benefit from a plan
- Scale planning to the problem
- Each significant work activity should have a statement of purpose
- Generate alternative solutions
- Keep a range of options open
- A good process leads to good decisions
- Separate process from content
- Keep teams small
- Consider the context of decisions
- Manage expectations, then meet them