Preparation for Technical Presentations to the Customer

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A necessary part of all projects is the presentation of the work to the customer. The presentation may be either an interim review of project status, a technical review of model or prototype development, or the final presentation of the project results. For someone still in school, the presentation format discussed below is also applicable to the defense presentation for a master's thesis or doctoral dissertation. The presentation portion of the project is easy to overlook as a minor part of the complete work package, but it is very important. Your presentation is frequently made to people who have not had detailed day to day involvement with the project and it may be the only chance to impress upon them the amount of work required and the level of confidence you have in the results. Leaving the customer with the feeling that they have received results that are complete, accurate, and defensible is key to the development of a long-term relationship with the customer and their return for future projects.

Review Audience
Inviting the right people who have the knowledge of the analysis and design techniques as well as familiarity with earlier designs and analysis is important. These people must be able to find mistakes and endorse good technical work. The manager cognizant of the project should always be invited (attendance left to the manager's discretion). Other mangers should be invited based on technical expertise and knowledge of the specifics of the project. Examples of a review audience for a multi-physics heat transfer / resultant stress analysis are: the engineer with design cognizance of the part or system, people who supplied information used in the analysis, the person who will use the results from the analysis, disinterested experts in heat transfer and stress analysis (i.e. persons with significant experience in the field but little or no direct involvement with the project being reviewed), and peers who have had experience with similar components. Always check with your customer to make sure that the review notification goes to everyone they consider necessary.

Purpose and Agenda
The purpose and the agenda are two items that are necessary to set the tone and direction of the presentation and should be prepared as the starting point in the development of the pitch. The purpose should be the first page of the presentation. Use this to focus the attention of the audience on the specific aspects of the project that will be discussed. Doing this first will help to eliminate tangential discussions and side issues that distract from the business of the day. Be specific when writing the purpose; it will focus your attention on what is needed for the presentation.

The agenda is the second page of the presentation and is a brief outline of the discussion. This gives the audience the order of topics to be discussed and helps to prevent questions that leapfrog to later segments of the presentation that have not yet been presented. If there are multiple presenters, each topic should have the presenter indicated. A good practice for the presentation is to refer back to the agenda as each topic is completed to give the audience a sense of where the discussion is going. The agenda is also the main headers for the detailed outline you will need for development of the presentation. Formulating the agenda first forces you to think through what is needed in the presentation and allows you to focus your efforts toward filling in the outline.

Background
Always assume that a part of your audience is not familiar with the project you are presenting. Because of this, you need to start with a discussion of the background of the project. The level of detail will vary with the particular project, but two questions should be answered with the background section.

The primary question is, "What is the reason the project is being worked?" The answer is normally covered in the statement of work that initiates the project but may require further clarification from the customer point of contact. Answering this question provides the justification for the time your audience is spending in your presentation.

The second question is, "How did the project get to this point?" The answer begins with a short history of the project to date and includes the start date, the starting point for the project, information provided by the customer, any previous presentations or reviews, and any standardized procedures required by the customer. The background should be a short summation that quickly brings the audience up to the primary part of the discussion. Some points that are touched on during the background section may require further development in other parts of the presentation.

Methodology
The methodology provides an overview of how the project was accomplished and often overlaps with the background. Along with the steps used to complete the project, references must be listed particularly if the customer has standard practices or procedures that were required. Test equipment and computer programs should also be named or described including any modification or additions needed for the project.

Development
The development section provides the details of how the project was accomplished. Specific items included in the development section vary greatly with the type of project. The types of items to be included are hand calculations, spreadsheets, drawings, boundary condition maps for analysis models, instrumentation layouts for testing, and fit-up studies for detailed design efforts. The development section normally only includes examples with the full set of details given as either an appendix to the presentation pitch or as a part of the final documentation. As many details as possible of the project development should be available at the meeting in order to answer the questions that are going to arise.

Validation and Verification
The validation and verification section of the presentation provides the customer with assurance that the results you are providing are accurate and workable. The actual process to achieve this can take many forms according to the type of project being presented. On the simple end of the spectrum, all that may be needed is hand calculations or comparisons to existing designs to show that the results are reasonable. On the complex extreme, a prototype unit or a pilot plant may have to be built to prove the concept. The level of validation and verification must be inline with the size and importance of the project. In addition, the level of detail provided in the presentation must be tailored to the audience.

Results
Usually the customer has specified the form in which the results are required and the results should be in that form. However, in many cases additional information needs to be presented to show potential problem areas or to enhance details that are important to the discussion. An example is a heat transfer analysis from which the required results are a thermal map of the entire component. The presentation of the temperatures for the component could mask a severe localized thermal gradient that would drive stresses to unacceptable levels. Give the customer everything they ask for but keep in mind that may not be all they need.

Graphics

Graphics can take the form of pictures, drawings, plots, or animations. The old adage that a picture is worth a thousand words is correct. Be generous with the use of graphics, but be sure that they are pertinent to the presentation. Don't use clip art cartoons to decorate a technical presentation. The graphics should be clear with good contrast; try to avoid excessive clutter.

Annotation must be a part of any graphic. Tell the audience what they are looking at and focus their attention on the area of interest. In cases that involve a series of graphics, most of the annotation can be placed in an introductory page. A good example is a series of plots comparing results from an analytical model to test data. The introductory page can describe the test and show a map of the instrumentation locations. The individual plots only need to indicate the specific location being plotted.

Summary and Conclusions

This section provides the participants with the specific items that should be taken away from the presentation. A statement of the bottom line results from the work completed to date is an obvious part of the summary and conclusions section, but several additional bits of information should be provided. This additional information is primarily concerned with the status of the project and the work to follow. State specifically if the project is complete. Also, indicate how the results of the project will be used. If the project is not complete, show where the project is within established schedules and give a listing of tasks to be completed.

General Thoughts

The above categories provide a general outline of the elements that should be included in a technical presentation. The particular presentation must be tailored to match the type of project and the point in the project that is being covered by the presentation. As an example, a presentation for a project in the planning stage would include only the background and methodology sections. Think about each of the sections and select what is appropriate for the upcoming presentation.

The following are several additional points that will help to make the presentation run more smoothly:

1. Schedule a realistic amount of time for the meeting, including time for questions and discussions. Don't put yourself into a situation where you have to rush. Also, don't scare away participants by scheduling an excessively long meeting.
2. If handouts are used, have enough copies for everyone.
3. Have slides and handouts in the order to be presented, and be sure to number all pages.
4. Bring supporting information, calculations, etc. to help answer questions concerning the details of your work.
5. If a question arises that you don't know the answer to, admit it, take an action item, and move on.
6. Check the facilities before the meeting and either tailor your presentation to the facilities or bring your own equipment (laptop, projector, screen, etc.)
7. Publish meeting minutes including any open items. This should be done quickly, preferably within two business days of the meeting. All open items should be closed out formally on a timely basis.
8. Include copies of all presentations as part of the final documentation of the project.

About the author:

George Moore, PE has performed detailed heat transfer analysis on military and commercial jet engines for more than six years. Prior to that, he spent thirteen years modeling and analyzing

heat transfer and fluid flow loss of coolant scenarios of US Naval nuclear power plants for the Bechtel Bettis laboratory (formerly operated by Westinghouse Electric).