

Why technical communication is different

Seems like it's no big deal, right? We communicate every day!

Here is what technical communication is all about:

“The effective leader *influences* not just subordinates, but has the additional need to exercise such influence over people in other companies, which requires leadership characteristics of a very high order.”

The key word here is *influence*. This is vital to maintaining control of the process. To do that you need a significant sphere of influence.

How communication influences

- Teaches
 - It allows team members to realize what they do not know, and re-learn what they have forgotten.
- Informs
 - By keeping everyone informed and up to date, efforts are coordinated and produce high quality results. Problems are avoided. People feel trusted.
- Convinces
 - For those who have not formed a point of view, communication helps to convince them that your ideas and processes are the right ones.
- Negotiates
 - It allows competing ideas to be presented fairly, and in a way that an optimal final product concept and process is adopted.
- Persuades
 - It changes the opinions and actions of others to match your own ideas, and does it in a constructive way.
- Documents
 - Creates a plan and record of what is done with respect to needs, goals, process, final product, and results. The process can be repeated.

Relevant communications

- Presentations
 - Relatively short, real time communication that you do in person
- Reports
 - Communication intended to keep people informed of the critical efforts of others. Keeps the program coordinated.
- Papers
 - More permanent communications documenting ideas, contributions and results that can be used in the future.
- Meetings
 - A support structure for some forms of communication. The key here is how to construct meetings to have maximal project benefit.

There are other forms, such as press releases, financial related forms, and advertisements. If there is interest we can discuss those.

Short Technical Communications

What are these for? Why worry about them?

In addition to necessary communication, they are also great PR!

- Progress: Let's people on the critical path know where each other are. Vital for forward progress.
- Problem reporting: Problems and issues won't get solved if you keep them to yourself.
 - Example of these: Weekly progress reports
- Requirement: They may be required by your client, or required by terms of the program contract.
- Your Boss: Your superiors will want to be kept informed
 - Example of these: Quarterly reports

Other reasons for being good at reports

- **Promotion and Visibility:** If the program is going well and you are doing a good job, then you want people to know. Sets a good track record for you, and people get to know who you are and what you can do.
- **Media Control:** If the program you are running is high profile, then you will be 'on stage' at times. You should control that.
 - Examples: White papers and program overviews
 - You may have a company Public Relations (PR) group to help
- It is good company practice. Failure to submit reports will make those who rely on information flows very unhappy. They won't know what you are doing, and at best it won't help your career.

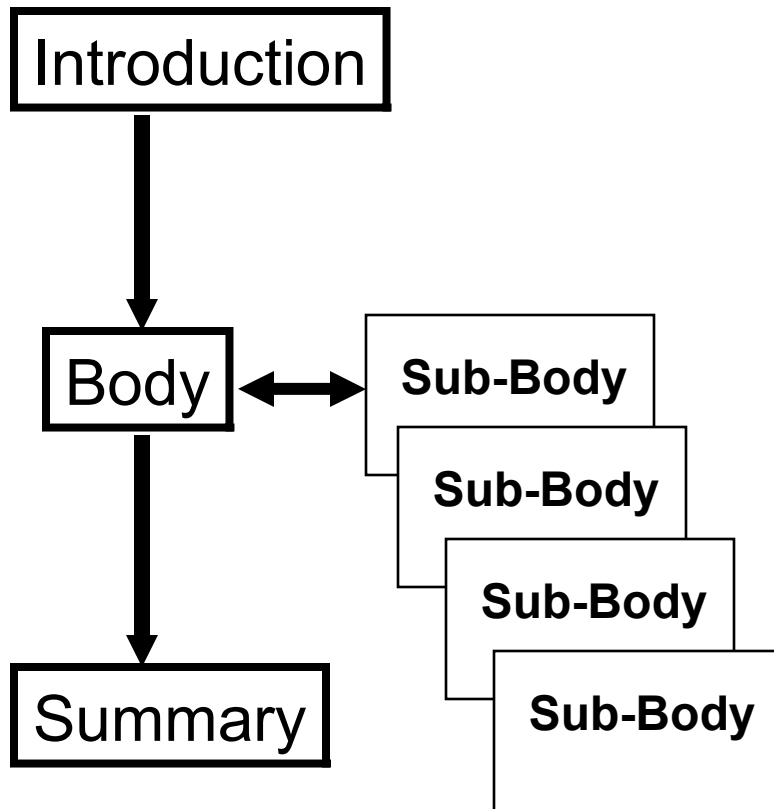
Each report type is useful

- Progress Reports
 - Very brief. Short or no background, as you assume the reader knows already what the big goals are.
 - They give progress updates and program status.
 - Short time frames. Once a week or once a month are typical.
- Quarterly Reports
 - Have a short background section to remind people what the project and product is
 - Discuss program results over a quarter year. The results are in moderate depth (a paragraph for each, not pages, and not one-liners).
- White papers
 - For public consumption
 - Give a more complete picture of the overall project and product
 - Not really fixed to any time period

General format and essentials of all reports

- In a technical environment, time and attention spans are short.
- People want to understand the essentials as quickly as possible.
- For all report types the format can be similar.
 - Just the level of detail differs
 - There are many possible formats. The following examples are just suggestions.
- A report structure that is hierarchical.
 - Kind of like structured programming methods
 - It helps people find what they want or need, and skip what they don't
- Three basic pieces to any report:
 1. An introductory statement
 2. A body with core information. The body can be hierarchical
 3. A final summary
- For white papers, an abstract or 'executive summary' can be good.
 - The report in one glance

General form of all reports



- The introduction states exactly what items the report is going to talk about.
- The body addresses each item mentioned in the introduction. Each item can have several points or items connected to it, which is covered in a sub-body. Those items, in turn, can have more items covered in another sub-body. Use as many as needed, but keep it easy to read. To the point.
- The summary at the end gives the final, “take away” message of the report.

Example: Progress Report

Pictures are interesting and help summarize the project goals.

Very brief review of project goals

Introduction with itemized points mentioning progress since last report

Body where each point is discussed

Summary listing technologies and patents. Also, contact information.

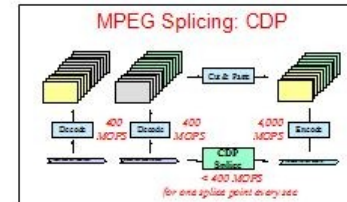
The entire update in one page.

CSL -- Visual Computing Department

Video Communication and Processing

December

Video Algorithms and Architectures



Mission/Purpose

Develop algorithms and architectures for multimedia processing with emphasis on digital video and audio.

Description/Objectives

This project is exploring *algorithms* and *architectures* for processing digital video and audio on a wide range of platforms spanning desktops and low-power media-rich, network-centric portable devices. Areas of focus are:

- Compressed-Domain Processing of Video/Images
- Image, Video, and Audio Processing and Compression

Progress/Accomplishments

Compressed Domain Processing (CDP) of Video/Images

VID will be using our CDP splicing solution as a key feature in their next-generation Media Stream Server. Previous solutions only allow cuts at 1/4 second boundaries while our approach allows cuts at any frame.

A CDP algorithm was created for tiling multiple MPEG video streams into one. All processing is performed on the bitstream level. Previous solutions require a decoding and recoding cycle. The CDP tiling algorithm is useful in video conferencing applications where a central server combines video streams from multiple sources and delivers them to clients to view the resulting stream with a single MPEG decoder. Our tiled MPEG sequences were used in filming HP's Masque video.

A DCT-domain method was developed for converting field-mode DCT macroblocks to frame-mode DCT macroblocks. This conversion process is essential in compressed-domain processing of MPEG-2 video since frame-mode DCTs are employed there. The CDP techniques we have developed to date work only on frame-mode DCTs. With the proposed conversion technique all of the previously developed fast algorithms can be readily used. Our approach yields a 4x reduction in complexity compared with approaches published in the literature. We have also developed a multiplier-free version of the algorithm for implementation on low-cost media processors.

Our software implementation of CDP downscaling of JPEG and Flashpix images was extended to handle various chroma subsampling formats. This code, along with our JPEG interface code, was transferred to IITo and is being used in their Imaging for Internet Software Release 2.0.

Image/Video Processing and Compression

A public-key video watermarking scheme was developed in collaboration with J. Hogan of STD. This algorithm is an extension of Natarajan's image watermarking work, this approach, however, does not require any information from the original video frames. Ten minutes of watermarked video frames were generated and sent to an external organization for visibility testing.

We developed a fast MMAX implementation of the Independent JPEG Group's public-domain encoder. This work was done in collaboration with the VCD Graphics group. Our MMAX JPEG encoder achieved a 3x speedup over the non-MMAX version. This work was requested by LSG's Color Laserjet and Consumables Division for use in two projects. With the MMAX code, LSG's PCL fast raster path achieved an overall speedup of 2x.

Papers/Presentations/Patents

Adaptive motion-vector resampling for compressed video downscaling, B. Shen, I. Sethi, V. Bhaskaran, IEEE Image Processing conference, ICIP'97, Oct. 1997.

Transcoding MPEG Video Streams in the Compressed Domain, S. Wee, V. Bhaskaran, HPL Tech Report, HPL 97-106, Aug. 1997.

Field-to-Frame mode conversions in DCT domain, V. Bhaskaran, N. Mahav, R. Kresch, HPL Tech Report, HPL 97-114, Sept. 1997.

Text and image sharpening in the JPEG domain, K. Konstantinides, V. Bhaskaran, G. Beretta, IEEE Image Processing conference, ICIP'97, Oct. 1997.

Digital Television Broadcasting: Nondisruptive Improvement over Time, W. Schreiber, M. Polley, S. Wee, SMPTE Journal, Vol. 106, No. 7, July 1997.

Contact

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