

Electronic Photography at NASA Langley Research Center

by

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The field of photography began a metamorphosis several years ago which promises to fundamentally change how images are captured, transmitted, and output. At this time the metamorphosis is still in the early stages, but already new processes, hardware, and software are allowing many individuals and organizations to explore the entry of imaging into the information revolution. Exploration at this time is prerequisite to leading expertise in the future, and a number of branches at LaRC have ventured into electronic and digital imaging. Their progress until recently has been limited by two factors: the lack of an integrated approach and the lack of an electronic photographic capability. The purpose of the research conducted was to address these two items.

In some respects, the lack of electronic photographs has prevented application of an integrated imaging approach. Since everything could not be electronic, the tendency was to work with hard copy. Over the summer, the Photographics Section has set up an Electronic Photography Laboratory. This laboratory now has the capability to scan film images, process the images, and output the images in a variety of forms. Future plans also include electronic capture capability. The current forms of image processing available include sharpening, noise reduction, dust removal, tone correction, color balancing, image editing, cropping, electronic separations, and halftoning. Output choices include customer specified electronic file formats which can be output on magnetic or optical disks or over the network, 4400 line photographic quality prints and transparencies to 8.5 by 11 inches, and 8000 line film negatives and transparencies to 4 by 5 inches.

The problem of integrated imaging involves a number of branches at LaRC including Visual Imaging, Research Printing and Publishing, Data Visualization and Animation, Advanced Computing, and various research groups. These units must work together to develop common approaches to image processing and archiving. The ultimate goal is to be able to search for images using an on-line database and image catalog. These images could then be retrieved over the network as needed, along with information on the acquisition and processing prior to storage. For this goal to be realized, a number of standard processing protocols must be developed to allow the classification of images into categories. Standard series of processing algorithms can then be applied to each category (although many of these may be adaptive between images). Since the archived image files would be standardized, it should also be possible to develop standard output processing protocols for a number of output devices.

If LaRC continues the research effort begun this summer, it may be one of the first organizations to develop an integrated approach to imaging. As such, it could serve as a model for other organizations in government and the private sector.