

station) in the work station local processor. This processor uses as its source data files (typically images) maintained on the work station disc. Processed results are then returned to the disc as processed files.

The use of disc to disc processing by the applications software is a key feature in the ARIES system. It allows the processing of large images, at full available dynamic range, without the restrictions of video memory capacity or even more important without requiring the acquisition of very high resolution displays. The processing results can be viewed on the display by a combination of roam and zoom at any convenient resolution. Alternatively, the use of any of the optional ARIES high resolution image recorders allows the production of hard copy outputs at the full spatial and dynamic resolution of the system, independent of the display configuration.

#### ARIES GROWTH CAPABILITY

The ARIES system is designed to be upward compatible. The basic work station is equipped with a microcomputer, which provides adequate computing power for most modest applications. However, some processes when combined with large images can become compute time limited. At this point, several optional growth strategies are available as a result of the flexible ARIES architecture. It should be emphasized that all options are transparent to the user (i.e. make no change in operating procedures).

Selection of an approach depends very much on the most frequent loading factor encountered. A cost effective solution for many situations is the addition of an Image Processing Accelerator (IPA). This is a low cost special purpose arithmetic unit which is especially effective in operations such as geometric correction.

An alternative strategy is the addition of a full high speed array processor. The array processor is well suited to more complex computational problems than the IPA, but is not as fast as the IPA on geometric corrections. It is provided with a full suite of software integrated into the ARIES system.

A third alternative is to replace the baseline processor with a more powerful mainframe. In this case, additional capabilities associated with the larger, more sophisticated mainframe are also available, for example a wider range of standard computer peripherals can be fitted. This approach is particularly well suited to general, multiuser batch processing.

Finally, multiple work stations, each containing a local processor, can be configured with a host computer providing background processing of batch tasks, plus co-ordinated control of a single set of centralized peripherals such as image recorders or high density magnetic tapes. In this configuration, a single array processor controlled by the host would often be cost effective, with one or more IPA on each work station providing the maximum speed and flexibility.

