THE GEOMETRIC WORKSTATION, A NEW APPROACH FOR GEOMETRIC CORRECTIONS OF REMOTELY SENSED DATA

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Accurate registration of image data to maps or image to image is mandatory for both cartographic and multi-temporal or multi-sensor studies.

Today, the auxiliary data provided with the images do not allow a satisfactory precision level in the image production. The magnitude of the errors varies with the sensors and can be greater than a hundred pixels.

If a better precision is needed, additional information such as pairs of ground control points (GCP) must be introduced. These GCP are identified on both the image under process and the geometric reference (an image or a map).

Acquisition of such sets of control points is usually a difficult and tiresome repetitive task.

This paper describes how the GEOMETRIC WORKSTATION overpasses some typical limitations of existing methods:

- a new interactive software has been designed in order to improve efficiency of the operators during the GCP acquisition,
- the systematic access to the map sheet has been suppressed by digitally storing the maps and retrieving them using a cartographic data base service,
- an automatic recognition of the GCP is provided by the database,
- a sophisticated signal processing has been implemented in order to improve the quality of the auxiliary data (for instance KALMAN filtering in the case of SPOT data)

The combination of all these features allows the GEOMETRIC WORKSTATION to perform quick and efficient geometric corrections. Since the operator's task is not so heavy thanks to a friendly interactive process a better precision in the GCP's coordinates is achieved. This improved precision is fully exploited by the accurate algorithm used for geometric precision modelling.