

one seeks to plan). Estimates of the costs and benefits of a planned development can be derived. Functional and non-functional aspects of software can be taken into account, and trades made among them. It becomes possible to optimize the planning process in the sense that it becomes possible to select the best suite of process steps and design choices to maximize the expectation of success while remaining within budget.

*This program was written by Martin Feather, Steven Cornford, and Leila Meshkat of Caltech and James Kiper of Miami University for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).*

*This software is available for commercial licensing. Please contact Don Hart of the California Institute of Technology at (818) 393-3425. Refer to NPO-40226.*

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## Software Processes SAR Motion-Measurement Data

Motion Measurement Processor (MMP) is one of three computer programs that are used together in the operation of a terrain-mapping dual-frequency interferometric synthetic-aperture-radar (SAR) system. The other two programs — Jurassicprok and Calibration Processor — are described in the two immediately preceding articles. MMP acquires all the motion and attitude data collected by onboard instrumentation systems, including radar, laser and camera metrology, inertial navigation systems, and Global Positioning System (GPS) receivers. MMP combines all this information and processes it into all the trajectory information needed to run Jurassicprok, which performs the interferometric processing and mapping functions. MMP includes several Kalman filters for combining and

smoothing aircraft motion and attitude data, and least-squares inversion and filtering software tools for solving for interferometric baseline lengths. MMP synchronizes the motion and radar data. It combines the various measurement data into a unified, seven-dimensional reference system and puts out the resulting filtered trajectory and attitude data along with instructions for use of the data by Jurassicprok, as well as the command files used to operate Jurassicprok.

*This program was written by Adam Freedman, Scott Hensley, Peter Kroger, and Charles T. C. Le of Caltech for NASA's Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).*

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