

by the user. The output includes summaries of rocket-engine operation, ignition overpressure time histories, and one-third octave sound pressure spectra of the predicted launch acoustics.

Also, documentation is available to the user to help him or her understand the various aspects of the graphical user interface and the required input parameters.

This work was done by Matthew Casiano of Marshall Space Flight Center. For more information, contact Sammy Nabors, MSFC Commercialization Assistance Lead at sammy.a.nabors@nasa.gov. Refer to MFS-32579-1.

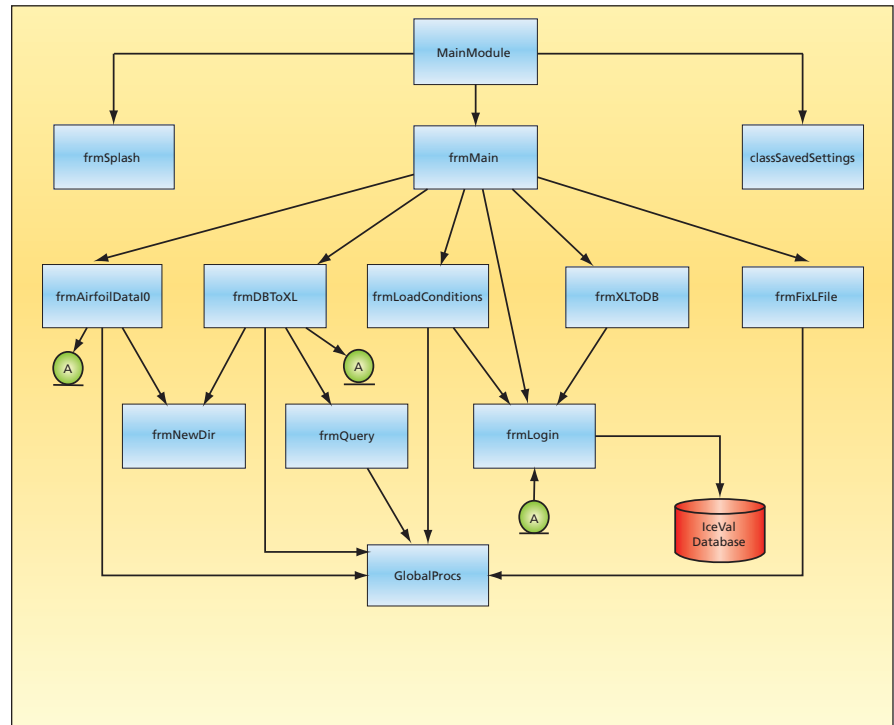
Interactive, Automated Management of Icing Data

John H. Glenn Research Center, Cleveland, Ohio

IceVal DatAssistant is software (see figure) that provides an automated, interactive solution for the management of data from research on aircraft icing. This software consists primarily of (1) a relational database component used to store ice shape and airfoil coordinates and associated data on operational and environmental test conditions and (2) a graphically oriented database access utility, used to upload, download, process, and/or display data selected by the user.

The relational database component consists of a Microsoft Access 2003 database file with nine tables containing data of different types. Included in the database are the data for all publicly releasable ice tracings with complete and verifiable test conditions from experiments conducted to date in the Glenn Research Center Icing Research Tunnel. Ice shapes from computational simulations with the corresponding conditions performed utilizing the latest version of the LEWICE ice shape prediction code are likewise included, and are linked to the equivalent experimental runs.

The database access component includes ten Microsoft Visual Basic 6.0 (VB) form modules and three VB support modules. Together, these modules enable uploading, downloading, processing, and display of all data contained in the database. This component also affords the capability to perform various



IceVal DatAssistant Software system structure.

database maintenance functions — for example, compacting the database or creating a new, fully initialized but empty database file.

This program was written by Laurie H. Levinson of Glenn Research Center. Further information is contained in a TSP (see page 1).

Inquiries concerning rights for the commercial use of this invention should be addressed to NASA Glenn Research Center, Innovative Partnerships Office, Attn: Steve Fedor, Mail Stop 4-8, 21000 Brookpark Road, Cleveland, Ohio 44135. Refer to LEW-18343-1.

LDPC-PPM Coding Scheme for Optical Communication

This scheme offers competitive performance and is suitable for parallel processing.

NASA's Jet Propulsion Laboratory, Pasadena, California

In a proposed coding-and-modulation/demodulation-and-decoding scheme for a free-space optical communication system, an error-correcting code of the low-density parity-check (LDPC) type would be concatenated with a modulation code that consists of a mapping of

bits to pulse-position-modulation (PPM) symbols. Hence, the scheme is denoted LDPC-PPM. This scheme could be considered a competitor of a related prior scheme in which an outer convolutional error-correcting code is concatenated with an interleaving operation, a bit-accurate

modulation operation, and a PPM inner code. Both the prior and present schemes can be characterized as serially concatenated pulse-position modulation (SCPPM) coding schemes.

Figure 1 represents a free-space optical communication system based on ei-