

## Development Status of the Vector, Signal, and Image Processing Library (VSIPL)

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In the application domain of real-time embedded signal processing systems based on commercial off-the-shelf (COTS) hardware and software, an increasingly important goal is portability and vendor-neutrality of application software. The Vector, Signal, and Image Processing Library (VSIPL) library is an open, vendor-neutral, industry standard application programming interface (API) to vector arithmetic and signal and image processing operations for users of COTS workstations and embedded signal processing products. Since HPEC 2001, the first-ever VSIPL User's Tutorial and User's Group Meeting has been successfully conducted, and the VSIPL standard has been updated to version 1.02, now available on the VSIPL web site (<http://www.vsipl.org>). An update to version 1.1 is being finalized and is also anticipated to be released during 2002. Version 1.1 will add new functionality for singular value decomposition, windowed fast Fourier transforms (FFTs), and input/output of vendor-dependent objects. In this talk, we will review the changes to be incorporated into VSIPL 1.1 and the documents and software available from the Forum and summarize commercial VSIPL implementations of which we are aware.

Especially significant to the continued development of VSIPL is its coordination with the High Performance Embedded Computing Software Initiative (HPEC-SI), described more fully in a companion paper by Kepner *et al.* HPEC-SI is an effort to bridge the gap between high level tools and embedded hardware by building and extending on existing open standards such as VSIPL, the Message Passing Interface (MPI), Portable Expression Template Engine (PETE) technology, *etc.* Planned HPEC-SI extensions will extend VSIPL into embedded niches not currently addressed, including a C++ binding and parallel data distribution and computational algorithms. The first product of HPEC-SI will be a C++ binding, currently referred to as VSIPL++, now under active development. In this talk we will describe the key issues and plans for this important expansion of the VSIPL API.