

VSIPL Forum Meeting

25-26 July 2000

SKY Computers: Chelmsford, MA

Attendance

Name		Organization	Phone	Email
Last	First			
Browne	Chuck	NAWC AD	301-342-2163	brownej@navair.navy.mil
Campbell	Dan	Georgia Tech Research Institute (GTRI)	770-528-7541	dan.campbell@gtri.gatech.edu
Christodoulou	Dimitris	SKY Computers	978-250-1920	dimitris@skycomputers.com
Ginn	Rob	NAWC AD	301-342-2346	rob@sun701.nawcad.navy.mil
Janka	Randy	Georgia Tech Research Institute (GTRI)	770-528-3165	randy.janka@gtri.gatech.edu
Judd	Randall	SPAWAR Systems Center (SSC-SD)	619-553-3086	judd@spawar.navy.mil
Kenny	James	Mercury Computer Systems	978-256-1300	jfk@mc.com
Lin	Mark	MPI Software Technology, Inc.	662-320-4300	mclin@mpi-softtech.com
Pancoast	Rick	Lockheed Martin GES	856-722-2354	rick.pancoast@lmco.com
Sacco	Sharon	CSPI	978-663-7598	ssacco@cspi.com
Weems	Chip	UMass Amherst	413-545-3163	weems@cs.umass.edu

Administrivia

Next Meeting

Tu/9-We/10 January 2001 at Mercury Computer Systems in Chelmsford, MA.

ERRATA ITEMS FOR VSIPL 1.0

rand

PROBLEM

The Random number generator section is confusing as to the first prime number for RAN1. The document indicates that RAN1 should start with 3, however the actual code supplied starts RAN1 with 5.

In addition the statement on page 257 is confusing: "In a parallel environment, each thread is assigned an addend for RAN1 which corresponds to the prime number taken from the sequence of prime numbers greater than three. Thus thread zero uses three as the addend for RAN1, thread one uses five as the addend for RAN1, thread two uses seven as the ADDend for RAN1, etc." The id variable passed to the rand object creation starts at one, not zero, and the sequence of prime numbers greater than three does not include the prime number three, even though thread zero is supposed to start with three.

FIX

The Forum decided to fix the code so that id 1 will initialize with prime number three, and the wording will be made clearer.

ACTION

Judd

getattr

PROBLEM

Get attribute functions sometimes return void, and sometimes return a pointer to the attribute argument.

FIX

All get attribute functions should return void

ACTION

Judd

putattr

PROBLEM

Some putattrib return convenience pointers to the altered view, and some return void.

FIX

All put attribute functions will return a convenience pointer.

ACTION

Judd

Matrix view function name errors

PROBLEM

Some tensor Matrix View functions are improperly named.

FIX

Correct.

ACTION

Judd

vsip_ttransview_p function return types

PROBLEM

The return type of vsip_ttransview_p functions is matrix, should be tensor.

FIX

Correct.

ACTION

Judd

tcreate argument error

PROBLEM

vsip_major used for tcreate instead of vsip_tmajor.

FIX

Correct.

ACTION

Judd

Enumerated type vsip_ttrans and vsip_tmajor syntax error

PROBLEM

Enumerated type vsip_ttrans and vsip_tmajor need to have the trailing “,” removed.

FIX

Correct.

ACTION

Judd

Tensor put function typing

PROBLEM

For tensor put offset, stride and length functions the input view is declared const. Since the attributes is being changed the input view should not be const.

FIX

Remove const.

ACTION

Judd

vsip_ttrans enumerated type error

PROBLEM

vsip_ttrans enumerated type has VSIP_TRANS_ instead of VSIP_TTRANS_ for two constants.

FIX

replace TRANS with TTRANS.

ACTION

Judd

Potential user data ownership ambiguity

PROBLEM #1

Mark Lin of MSTI wanted clarification on user data ownership. Admit and release have a TRUE/FALSE argument to indicate the required state of the block/user data upon admit and release. What is the state of the user data if the blockadmit had a false flag, assuming blockrelease was done with a false flag?

The Forum pretty much had no misunderstanding on any of these issues, but felt some additional statement in the document was needed.

FIX #1

Upon blockadmit, Ginn suggested changing “shall be consistent” to “shall be made consistent.” Forum agreed to this.

ACTION #1

Judd

PROBLEM #2

We also want a statement that the state of the user data is not determined to be unchanged if the false flag is always used. The following two statements were debated as potential additions to the appropriate Notes and References section:

1. “The state of the user data after a blockrelease with a false update flag is implementation dependent.” (Sharon Sacco)
2. “If the update flag is set to false the released memory should be assumed to contain garbage” (Rob Ginn)

No consensus of the Forum was forthcoming on either statement.

FIX #2

No fix at this time. The Forum should think about this and revisit it at the next meeting.

ACTION #2

Forum

SVD consistency

PROBLEM

For the SVD there are some consistency problems with the enumerated type vsip_svd_uv. Dimitris Christodoulou of SKY pointed this out, and also wanted to change the argument for the enumerated type to Vsave from VTsave. In addition the routine does not return VT or VH but a vsipl svd object. So the sentence “Note that the routine returns either VT or VH” is not correct.

FIX #1

It was agreed to remove this sentence, and to change VTsave to Vsave, and to fix any consistency on the enumerated types.

ACTION #1

Judd

FIX #2

Also Dimitris wants a statement about why no solver is needed for the SVD. The Forum agreed to this.

ACTION #2

Dimitris

DOCUMENT MAINTENANCE

A discussion was held about how to handle errata items, what to do about MS Word (it's a pain to work with this large of a document), and how to proceed with a newer version of the Spec.

The Forum agreed that the errata will be written as separate documents, one for each item, and at the next meeting final approval for the errata will be made. When this is done the current VSIPL 1.0 will be corrected to include the errata and will be version 1.01 when approved by the Forum. We will do this in MS Word.

Version 1.01 is primarily for errata fixes to the current document and will not include new functionality (except for one item discussed under the JOD below).

For newer documents the Forum is considering its options. We may want to stay with MS Word, but break up the Spec into smaller documents. We may want to move away from MSWord. We may want to do both (i.e., smaller documents, and move away from MS Word).

JOD ITEMS

The Forum reviewed the JOD items and placed priorities on them. The following JOD items are not in the order of review, but of their new priority.

#0 Cumulative sum

The cumulative sum is a missing function, which was not included in the current specification. A complete man page is available. The Forum agreed to add this to version 1.01 and remove it from the JOD.

ACTION

Judd will review man page, edit as necessary, and place with errata for addition to VSIPL 1.01.

#1 Saving/passing VSIPL objects

It is desirable to have a method to save non-simple (such as QRD, LUD, or FFT objects) VSIPL objects, and then recreate them from data storage. It is also desirable to be able to communicate these objects in a message passing environment so that one process can create them and many processes can use the same object. This item was the highest priority JOD item.

ACTION

Judd will investigate and produce a trial set of functions for this purpose, then present at the next Forum.

#2 Development mode

The development mode specification needs to be improved. In addition a defined set of numerical errors for return by an error mechanism is desirable. This was deemed to be important, but it was not agreed upon how to proceed exactly.

ACTION

Ginn will review development mode and make suggestions to the Forum for defined errors.

#3 Image processing

Image processing is a medium priority JOD item. As a result of Chip Weems' talk (below) and other factors, the Forum does not want a full-blown effort for image processing. The general idea seems to be to

put together something based on the current specification which is very limited. Currently there are no suitable people to work on this so this is a Forum action item.

ACTION

Forum will think about how to proceed. A single volunteer is needed who understands image processing enough to finish the current spec.

#4 Iterators

Iterating seems to be a low priority idea. The Forum feels that using current functionality iterators can be done with little impact on performance, and implementors would not be able to do much better doing the iteration internally. Iterators remain in the JOD but will probably be removed at the next meeting if there is no support for them.

#5 Free views

View freeing seem to be a low priority idea. Much of the usefulness of free views can be achieved by defining large blocks. Free views may be removed at the next meeting if there is no support for them.

#6 Tisdale items

Tisdale's performance error and C++ JOD items seem to be overtaken by events; i.e., at this time there is no support in the Forum for them. They are to be removed from the JOD.

ACTION

James Lebak will remove these items from the JOD.

IMAGE PROCESSING TALK

Chip Weems of UMass Amherst gave a frank talk about where he thought the Forum should go in relation to image processing. Basically he didn't think we should go there. He felt that the current (JOD image processing item) specification was fine, except we may want to add some standard image conversions to that specification.

Chip seemed to feel that there had already been (expensive) efforts to produce an image processing spec; the specs were very large; and, they were not widely adopted. The image processing community is very diverse, and everybody tends to roll their own.

ACTION

Chip should email a copy of his slides to Randy Janka for inclusion in the meeting notes.

C++ TALK

Dan Cambell gave a talk about his C++ effort for a VSIPL C++ API. Dan has produced a C++ Core Lite implementation and accompanying documentation. The documentation includes tradeoffs, various decisions made, class structure, and examples.

After Dan's talk there was some discussion. It is not clear that the Forum would decide to go with Dan's methodology, but it is clear that the work Dan has done is important in determining the proper methodology.

ACTION

Cambell will place his document on the Web site (in the core group area) in PDF format for those who were not at the meeting.

VSIPL Evangelism

Randy Janka talked about some of the conferences he has attended and VSIPL evangelism; see web site for slides with specific venues.

VENDOR DISCUSSION

The vendors were asked to give a status report of what they see happening with VSIPL from the vendor perspective.

Mercury Computer Systems (Jamie Kenny)

Has completed Core Lite and is starting to develop some matrix functionality. Mercury appears to be waiting for more user demand before developing complete VSIPL functionality.

MPI Software Technology, Inc. (Mark Lin)

Should be supporting the Core profile by the end of the year. MSTI supports Power PCs running Linux, Lynx and VxWorks. Expects to add support for Intel. MSTI is experiencing support from Europe for VSIPL.

CSPI (Sharon Sacco)

CSPI supports Core Lite. Is waiting for more user demand before supporting larger profiles.

SKY (Dimitris Christodoulou)

SKY has fully embraced VSIPL and is approaching a complete VSIPL implementation for their product. For VSIPL functionality that they don't already support, SKY's approach is to implement that functionality in both VSIPL and Standard Math Library (SKY library). For full VSIPL functionality, including more complicated functions (e.g., solvers associated with decompositions), users will be directed to VSIPL since SKY may only supply the bare decomposition in SML.

TENSOR FUNCTIONALITY and GENERALIZED VIEWS

Randy Judd was interested in what additional functionality should be added to the specification for tensors (there are currently very few functions with prototypes for tensors), and if a view for higher dimensional objects is needed. Not much interest was developed for either of these ideas, although it was agreed that elementwise adds and multiplies for Tensor should go in the next version of the specification.

ACTION

Randy Judd will write up prototypes for elementwise add and multiply for inclusion in a future version of the specification.

WEB SITE

Randy Judd and Rob Ginn complained about the state of the VSIPL web site. It needs to be cleaned up and updated. This is not the webmaster's problem since material to be moved or removed and new material to be added are not in his domain. All agreed that the web site is the most important asset for selling VSIPL to new people.

ACTION

Randy Janka and James Lebak (co-chairs are in charge of site) should examine web site and give direction and new material to webmaster for inclusion in the web site. Co-chairs should ask Forum for help as necessary.

TEST SUITE

Test suite was discussed. The current test suite only tests Core Lite functionality. The test suite is not quite ready to be released, but should be ready soon. A couple of problems are how to make the test suite suitable for more types (currently only supports `_i` and `_f`), and how to make it extensible. These will probably need to be answered as the test suite is used.

Randy Judd claims that Core Lite is the most important functionality and if a library properly implements Core Lite then many of the VSIPL compliance questions have been answered. Randy Judd would like to see more functionality implemented as time permits, but probably not all of Core in the foreseeable future.

Dan Cambell and Randy Janka feel that the test suite should only test complete profiles and implementing a test suite outside some profile is wrong. This generated some discussion. It was pointed out that the current test suite, although it is complete for Core Lite, does not ensure that Core Lite is 100% VSIPL compliant; it only ensures that it passes the test suite.

Since the test suite is a common test available to all, it does give a synchronization point for vendors and users. It was noted that not passing the test suite indicates the implementation should not claim VSIPL compliance, so all implementations need to be at least Core Lite compliant at this time to be blessed by the Forum as VSIPL-compliant.

Funding for test suite development is currently not a priority item for TASP. Additional test suite development will need to take place as a spare time project unless another party is interested enough to pick up the funding.

ACTION

GTRI will finish current test suite and documentation, then release same for use. After the release, the Forum probably needs to bless it at the next meeting; however the test suite has been run by most of the vendors so there should be little discussion.

Meeting adjourned at 12:30, Wednesday, 26 July.