DRAFT MINUTES OF MEETING **SC22/WG11/N407**

Committee: ISO/IEC JTC1/SC22/WG11

Place: Digital Equipment Corporation
Maynard, U.S.A.

Date: January 30 - February 3, 1995

Attendees:

Mr. Ed Barkmeyer	NIST, USA.
Mr. Robert Eachus	MITRE Corporation, USA
Mr. Kevin Harris	DEC, USA
Mr. Randy Hudson	Intermetrics Inc, USA
Prof. Katsuhiko Kakehi	Waseda University, Japan
Mr. Kent Karlsson	Chalmers University of Technology, Sweden
Mr. Brian Meek	King's College London, UK
Ms. Mary Payne	DEC, USA
Mr. Paul Rabin	OSF, USA
Mr. Craig Schaffert	DEC, USA
Mr. Willem Wakker	ACE, Netherlands (Convener)

1. Agenda (WG11/N402)

It was agreed to handle the various topics in the following order:

Monday afternoon:	Opening, reports, alignment LIPC/RPC
Tuesday:	LID ballot resolution
Wednesday:	LIA-2
Thursday:	LISS
Friday:	Round-up, close of meeting

2. Minutes of Previous Meeting (WG11/N395)

The minutes were approved.

3. Convener Report

The new delegate from Japan was welcomed: WG11 looks forward to a fruitful cooperation with the Japanese experts.

The convener reported on two important issues from the last SC22 Plenary (September 1995):

1. The SC21 Plenary had decided in August 1994 to replace the RPC specification that had been under production (in cooperation with WG11) by the completely different X/Open DCE/RPC specification. The effect is that the alignment between LIPC and RPC is completely destroyed.

   SC22 instructed WG11

   — to investigate the differences between the new RPC specification and LIPC,
   — to report back to SC22 on this issues, and
   — not to progress LIPC to the next stage until this investigation was completed.

   It was noted with great dismay that still no official notification of the change of plans of SC21 was received by either SC22 or WG11.

2. With JTC1 ballot on LISS, 6 countries indicated that they would participate actively in the work (Denmark, Germany, Japan, Netherlands, Roumania and UK). However, Germany, Japan and Roumania are not active in WG11, and Denmark is only marginally active. This means that the active participation on this project is questionable. The US voted NO on the project, although the projected project-editor comes from the US.

   It was decided at the SC22 plenary that Germany and Japan would nominate experts for active participation, and that an attempt would be done to start with the project.

   It was noted that Germany has not yet nominated an expert.

4. National Activity Reports

4.1 BSI IST/5/11, Report by Brian Meek

The UK panel remains active but has mainly operated by electronic mail since the last WG11 meeting, though a meeting was held on 10 January 1995 to review the WG11 agenda and in particular review the LIA-2 draft, which the UK had been pleased to see. We are glad to report that John Dawes is now back at work in the panel and in the parent (SC22 level) committee. In that regard, it should be noted that John is still active in PCTE and is forming a UK panel to shadow WG22, and has expressed himself willing to act as liaison between WG11 and WG22 if both WGs think that is a good idea.

4.2 ANSI X3T2, Report by Craig Schaffert

Since the last WG11 meeting, X3T2 has concentrated on Conceptual Schema Interchange work. X3T2 did formulate comments on LID and LIPC, but progress in LIA and LISS has been left to the respective editors.

4.3 Report from the Japanese WG11 group by Katsuhiko Kakehi

The Japanese WG11 group was recently revitalized, and has now 9 members. At this point in time, their main activity is to get familiar with the various WG11 projects.

It is the opinion in Japan that the language independent work should get more emphasis in SC22.

5. Work Item 22.16 - Language Independent Procedure Calling

At the last meeting (April 1994), the comments on the CD ballot on LIPC were discussed, and a new draft of the document was prepared by the convener to be forwarded for DIS ballot. However, during the SC22 plenary, WG11 was instructed to first study the issue of alignment with RPC, before the next stage was entered.

No official version of the new RPC document was received by WG11, only drafts of some parts were available.

It was decided that an informative annex to LIPC will be produced, describing in an informal way the relationship between the LIPC and the RPC.

The differences between the LIPC-IDN and RPC-IDL are not very serious; however, since the RPC-IDL clearly describes a subset of the more general LIPC mechanisms, it is not possible to incorporate the RPC-IDL in the LIPC specification, as this would imply a limitation on the LIPC as it stands. Adoption of the RPC-IDL would also have serious consequences for the LID-IDN (which is a subset of the LIPC-IDN).

The suggestion to include in this process also the CORBA IDL was rejected for the following reasons: the status of the CORBA specification within ISO is unclear, and the alignment between 2 specifications under consideration by SC21 (RPC and CORBA) is really an SC21 matter.

As soon as the annex is available, the LIPC document will be forwarded to JTC 1 for DIS ballot.

Milestones for the LIPC project:

2.8	93-10	WD approved for registration as CD
3.0	93-11	CD registered
3.8	94-10	CD approved for registration as DIS
4.1	95-03	DIS ballot initiated

6. Work Item 22.17 - Language-Independent Datatypes

The DIS 11404 was approved by JTC 1 (closing date of the ballot was October 16, 1994) with 15 YES votes and 5 (Australia, Canada, Germany, Japan and USA) NO votes (WG11/N403).

The comments were discussed, details can be found in the disposition of comments document (WG11/N408, to be produced).

The final version will be sent by the end of February 1995 to ITTF for publication.

Milestones for the LID project:

2.8	91-01	WD approved for registration as CD
3.0	91-05	CD registered
3.1	91-05	CD study initiated
3.8	93-10	CD approved for registration as DIS
4.1	94-04	DIS ballot initiated
4.8	95-03	Full report circulated and DIS approved for publication as IS

7. Work Item 22.28 - Language-Independent Arithmetic, Part 1: Integer and Floating Point Arithmetic

The IS was published by ITTF in 1994.

8. Work Item 22.33 - Language-Independent Arithmetic, Part 2: Language Independent Mathematical Procedure Standard

A first working draft of LIA-2 (WG11/N404) was discussed extensively. Topics were:

— change the title of part 2 to "Elementary Numeric Functions." The title of part 3 would presumably be changed to match. This will be further discussed via email.

— standardize the evaluation of expressions. This is a major work item, not currently in the LIA-2 scope, and should thus be developed as a separate work item. Maybe LIA-4?

— Conformity: allow implementations to conform to individual functions or groups of functions. The conformity clause should be base the conformity clause on the LIA-1 text.

— Scope / What functions to include:

- Include the elementary numerical functions from existing or proposed standard languages.
- Do not include intricate functions such as matrix inversion -- even though Basic does.
- Large separable groups of functions (such as matrix arithmetic or statistical functions) deserve to be handled as separate parts of LIA.
- Include detailed radix and type conversions.
- Include functions to help define conversions to and from textual forms. Definitely decimal, possibly other radices. Note that these functions are intended to handle the radix conversion and rounding issues, not formatting.
- Include reasons in the rationale.
- Exclude functions that just "move values around" rather than compute. Example: min and

max.

- Generally avoid simple compositions of existing functions. Particularly mixed mode functions. We don't need to get into defining all the possible combinations.
- Compositions that add something (like guaranteed single rounding) are reasonable candidates.
- Try to use single definitions and variants when possible. Example: the trig functions in degrees in the first draft.
- Generalize hypot to euclidean-norm? How do we handle varying numbers of arguments?

— Required accuracy: there was a general feeling that 1/2 ulp accuracy on all functions would be nice, but very expensive. We would need a strong argument that acceptably efficient algorithms are available for each function so specified.

The opposite extreme is to permit any accuracy to conform, and require runtime accessible parameters which characterize the maximum error. This was also rejected as unnecessarily permissive.

LIA-2 will stipulate a maximum permitted error for each function. These will be stipulated independently, but may fall into natural groups. Runtime information will be required.

The Ada functions package will provide some information on achievable accuracy.

— Runtime parameters: a simple "max error over the whole domain" parameter seems feasible for all the functions that we are currently considering. A more complex approach such as an "error at a given point" function is much harder to provide. Since simple solutions are preferred, we will require a single max-error parameter for now.

— Form of specifications: don't define mathematical functions such as sine. Assume them instead.

Specify how functions behave when given NaNs and Infinities as arguments. Specify when NaNs and Infinities shall be produced as results. Such specifications shall hold whenever the implemented floating point types have such values.

Be compatible with the NCEG work as much as possible.

Axioms requiring certain exact values to be returned are OK.

Monotonicity falls out naturally from many implementations of single argument functions and is useful.

— Notification: adopt the LIA-1 model and requirements with additional exception names.

An "argument too large" notification is tentatively accepted for the basic six trig functions. More discussion is needed.

Most overflow and underflow boundaries appear to be exact. If so, no provision for "fuzzy" notification boundaries is needed. But this needs further analysis.

It is planned to have an updated version before the next meeting, and a WD for CD registration by September 1995

Milestones for the LIA Part 2 project:

2.1	91-09	WD study initiated
	94-11	First draft circulated
2.8	95-09	WD draft for CD registration

9. Work Item 22.34 - Language-Independent Arithmetic, Part 3: Language Independent Complex Arithmetic and Procedure Standard

No progress made. The planning of this work follows the planning for LIA-2, with a delay of one year.

Milestones for the LIA Part 3 project:

2.1	91-09	WD study initiated
	95-11	First draft circulated
2.8	96-09	WD draft for CD registration

10. Work Item 22.46 - Language-Independent Service Specifications (LISS)

Despite the limited support by National Bodies it was decided to continue the project. The motto for the project will be "provide guidelines and provide them quickly". This means that we should take the TCOS document (N392) and adapt it to LID/LIPC, and do not do any serious and time consuming development.

Based on commitments by the project editor and the UK WG11 panel, an aggressive timeschedule was agreed, which should lead to a WD for CD registration by the end of September 1995.

Milestones for the LISS project:

2.1	94-04	WD study initiated
	95-04	First draft circulated
2.8	95-10	WD draft for CD registration

11. Planning and Future Meetings

May 29 - June 2, 1995	Amsterdam	Issues: LIA-2, LISS
September 1995	USA	Date and place to be fixed. Preferably immediately before or after the SC22 plenary in Annapolis (September 18-22). Issues: ballot comments on LIPC, LIA-2, LISS

12. Close of Meeting

The host, Digital, was thanked for organizing the meeting.

13. Documents identified since last mailing

WG11 Nbr	Other Nbrs	Author	Title
404		Editor	Draft LIA-2
405			Resolution ballot comments on CD 13886 (N394)
406		Convener	Meeting announcement WG11 meeting May 1995
407		Convener	Minutes WG11 Meeting January 1995