

Business Plan and Convener's Report

ISO/IEC JTC 1/SC 22/WG 14 (The Programming Language C)

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SUBMITTED BY:

Convener

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**1. MANAGEMENT SUMMARY**

**1.1. JTC 1/SC 22/WG 14 STATEMENT OF SCOPE**

Development and maintenance of ISO/IEC Standards related to the programming language C.

**1.2. PROJECT REPORT**

**1.2.1. COMPLETED PROJECTS**

JTC 1.22.20.01 – Programming Language C (Revision of ISO/IEC 9899:1999), this project was delivered by the publishing of ISO/IEC 9899:2011.

JTC 1 NP 18037, Extensions for the programming language C to support embedded processors. This is a Technical Report type II.

JTC 1 NP 19769, Specification for Additional Character Data Types to the Programming Language C. This is a Technical Report type II.

JTC 1 NP 24731, Extensions to the C Library, — Part I: Bounds-checking interfaces. This is a Technical Report type II.

JTC 1 NP 24731, Extensions to the C Library — Part 2: Dynamic Allocation Functions. This is a Technical Report type II.

JTC 1 NP 24732, Extensions for the programming language C to support decimal floating point arithmetic. This is a Technical Report type II.

JTC 1 NP 24747, Extensions for the C Standard Library to Support Mathematical Special Functions. This is an International Standard.

JTC 1 NP 17961, *C Secure Coding Rules*. This is a Technical Specification.

JTC 1 NP 18661-1, *Floating-point extensions for C*. This is part one of a five part Technical Specification.

JTC 1 NP 18661-2, *Floating-point extensions for C*. This is part two of a five part Technical Specification. (Published date 2015-05-15)

### 1.2.2. PROJECTS UNDERWAY

JTC 1 NP 18661-(3, 4, and 5), *Floating-point extensions for C*.

### 1.2.3. CANCELLED PROJECTS

None over this period.

### 1.2.4. COOPERATION and COMPETITION

Where appropriate, WG 14 has established active liaisons with other SC 22 working groups. A category C liaison has been established with the MISRA C working group. There is no apparent direct competition with any other current SC 22 working group.

## 2. PERIOD REVIEW

### 2.1. MARKET REQUIREMENTS

WG 14 feels that the committee is responding to the C user community concerns and to the C implementers' issues when the ISO/IEC 9899:1999 standard was updated ahead of published schedule, in 2011. WG 14 believes that the ISO/IEC 9899:2011 standard answered many concerns and keeps the International Standard for the C programming language current.

WG14 believes the publication and maintenance of TS 17961 addresses important security issues that affect the entire C community. The document is in active use in the industry.

WG14 is currently working on TS 18661 parts 3, 4, and 5. A C binding to the new IEEE Floating-point, see SC 22 N4796.

WG 14 is currently studying how best to incorporate parallel programming into the C language.

WG 14 is currently working on how best to deal with the mandated ISO (Live Link/Open Text) e-committee package.

## 2.2. ACHIEVEMENTS

- WG 14 is currently working on 30 open defect reports logged against 9899:2011 and 1 open defect report on TS 17961.
- WG 14 published the Technical Specification 18661 part II.
- WG 14 successfully moved Technical Specification 18661 part III to the final publication stage, and publication is imminent.
- WG 14 successfully moved Technical Specification 18661 part IV to the final publication stage, and publication is imminent.
- WG 14 has a study group to study approaches to adding parallel programming to the language.
- WG 14 has incorporated ISO e-committee into its workflow, and is trying to make this system work.

## 2.3. RESOURCES

WG 14 meets two times per year in co-located technical sessions with the [US Task Group INCITS PL22.11](#). Over the past several years, WG 14 has timed at least one of its yearly technical sessions to coincide with WG 21, allowing those technical experts that would like to attend both technical sessions the opportunity to do so without extra travel. The WG 14 Convener would like to thank the WG 21 Convener for the extended effort it takes to coordinate common meeting locations and liaison between the two working groups.

Next year, WG 14 and WG 23 are timing their April meetings to coincide with each other. The WG 14 Convener would like to thank the WG 23 Convener for his coordination effort.

Over the last several years WG 14 has made Web conferencing capabilities available for those that are finding it difficult to travel. WG 14 would like to thank ISO for the Web conferencing support.

In the past years, fourteen countries participate by attending these meetings or by being involved in the technical discussions that take place over the e-mail reflector. The countries are: Australia, Canada, Denmark, France, Germany, Italy, Ireland, Japan, Netherlands, Norway, Russia, Sweden, UK, and the USA. However, with the new system forced upon us by ISO, only Canada, Denmark, Italy, Netherlands, Russia, UK and US will be able to participate.

WG14 has been monitoring the cross-language standards activities, and are using the ISO/IEC JTC 1/WG 20 guidelines on extended characters. WG 14 also keeps apprised of the requirements of the LIA-1, 2 standards.

## WG14 Convener's Report

WG14 liaison appointments are:

Group	Name/Type	Person(s) assigned
WG 21	C++	Group liaison assigned <sup>1</sup>
FSG	Free Standard Group	Nick Stoughton
WG 23	Vulnerabilities	Tom Plum
MISRA-C	Category-C Liaison	Clive Pygott

### 3. FOCUS NEXT WORK PERIOD

WG14 will focus on:

- Working on how to make the mandated ISO e-committee system (Live Link/Open Text) work for WG 14.
- Resolving defect reports for 9899:2011 and 17961:2013.
- Developing TS 18661 parts 3, 4, and 5
- Studying parallel programming

The Committee has discussed several other possible new work items, and is currently studying the possibilities for a Technical Specification on parallel programming.

#### 3.1. DELIVERABLES

None.

#### 3.2. STRATEGIES

WG14 believes that routine handling will suffice to complete the progress desired.

#### 3.3. RISKS

A decrease in participation due to being forced to comply with a mandate from ISO, see JTC 1/N 12032.

#### 3.4. OPPORTUNITIES

None.

#### 3.5. WORK PROGRAM PRIORITIES

WG 14 will respond to any Defect Reports logged for the current ISO/IEC 9899:2011 Standard and the currently active published Technical Reports TR 18037, TR 24731-2, TS 17961 and IS 24747. WG 14 will work on the development of the Technical Specification 18661.

### 4. OTHER ITEMS

#### 4.1. POSSIBLE ACTION REQUESTS AT FORTHCOMING PLENARY

WG 14 discussed the systematic review of ISO/IEC TR 19769:2004. The consensus was that this TR should be withdrawn because it is subtly different

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<sup>1</sup> Intel, Oracle, Plum Hall, and Perennial.

from what eventually went into the standard, and keeping the TR can only accomplish confusion. Later when the ballot was held, Canada, Japan, and the US proposed withdrawal and the rest of the national bodies voted to confirm. WG 14 would like SC 22 to reconsider at Plenary and requests a vote to withdraw.

#### 4.2. PROJECT EDITORS

The following individuals have been appointed project editors and backup project editors:

JTC 1.22.20.01, *Programming Language C (Revision of ISO/IEC 9899:2011)*  
Larry Jones (Project Editor), David Keaton (Backup Project Editor).

JTC 1 NP 18037, *Extensions for the programming language C to support embedded processors.*  
Willem Wakker (Project Editor)

JTC 1 NP 19769, *Specification for Additional Character Data Types to the Programming Language C.*  
None. Incorporated into the C standard and not intended to be maintained.

JTC 1 NP 24731, *Extensions to the C Library – Part I: Bounds-checking interfaces*  
None. Incorporated into the C standard and not intended to be maintained.

JTC 1 NP 24731, *Extensions to the C Library – Part 2: Dynamic Allocation Functions.*  
David Keaton (Project Editor)

JTC 1 NP 24732, *Extensions for the programming language C to support decimal floating point arithmetic*  
Edison Kwok (Project Editor)<sup>2</sup>

JTC 1 NP 24747, *Extensions for the Standard Library of the Programming Language C to Support Mathematical Special Functions*  
David Keaton (Project Editor)

JTC 1 NP 17961, *C Secure Coding Rules*  
Robert Seacord (Project Editor)<sup>3</sup>

JTC 1 NP 18661, *Floating-point extensions for C*  
James Thomas (Project Editor)

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<sup>2</sup> Currently not listed in the ISO global directory.

<sup>3</sup> Currently not listed in the ISO global directory.

### 4.3. ELECTRONIC DOCUMENT DISTRIBUTION

WG 14 has conducted some of its detailed technical discussion using an e-mail reflector provided by the Danish UNIX Users Group, Copenhagen University College of Engineering and Keld Simonsen.

WG 14 also has an ftp and [Web site](#) provided by courtesy of the Copenhagen University College of Engineering, Danish UNIX Users Group and Keld Simonsen. WG 14 has also placed its documents on the ISO mandated site, and updates the site with each new document.

WG 14 uses a secure wiki setup and maintained by Keld Simonsen. This wiki is used for quick exchange of documents during and between meetings eliminating the need for paper during the meeting.

WG 14 is providing all the appropriate committee documents on the Committee Web site, eliminating the need for paper mailings.

WG 14 also now provides Web conference capabilities allowing technical experts that are not able to travel to participate.

WG 14 would like to call attention to the following deficiencies of e-committee that need to be addressed before the system can meet the needs of working groups in general, and WG 14 in particular.

- Access to [isotc.iso.org](http://isotc.iso.org) is fragile. The initial e-mails to new members sometimes do not appear, and at other times are not understood by the recipients. Consequently, not all members have the access they need to the working group's site. One member sent e-mail to [helpdesk@iso.org](mailto:helpdesk@iso.org) for help and his messages were lost, possibly due to spam filtering. Some new members do not realize that their account has already been created, and the "I don't have an account yet" link could help by detecting this.
- The e-committee documents do not appear to be searchable by search engines. The C community has benefited greatly from WG 14 documents being available as search results.
- The URLs of documents in e-committee do not appear to be predictable. The defect report log, agendas, and document log all need to point to easily predictable and understandable URLs to keep errors to a minimum.
- The document names and descriptions are not useful because they are truncated. On the external WG 14 site, this problem is avoided by having a document log with the description of each document and the name of its submitter. The file names are the N numbers of the documents, making the URLs predictable and simple.
- A corrupted file was uploaded to e-committee by accident and the system would not let us replace it. The previous time that this occurred, it took two weeks of e-mail exchanges with ISO to get it fixed. Therefore, this time we left the corrupt file alone and updated the external site, which was easy to revise.

#### 4.4. RECENT MEETINGS

02-06	Feb 1998	Frisco, CO USA	ANSI, Keaton Consulting
23-27	Jun 1998	Copenhagen, Denmark	Danish Standards
05-09	Oct 1998	Santa Cruz, CA USA	ANSI, SGI/Cray
01-05	Feb 1999	Portland, OR USA	ANSI, Intel Corp
21-24	Jun 1999	London, UK	BSI
18-23	Oct 1999	Kona, HI USA	ANSI, Plum Hall
10-14	Apr 2000	Tokyo, Japan	ITSCJ, NEC
16-20	Oct 2000	Toronto, Canada	SCC, IBM
23-27	Apr 2001	Copenhagen, Denmark	Danish Standards
16-20	Oct 2001	Redmond, WA USA	ANSI, Microsoft
15-19	Apr 2002	Curacao, Netherlands Antilles	NNI, Netherlands
14-20	Oct 2002	Santa Cruz, CA USA	ANSI, Dinkumware
31-04	Mar/Apr 2003	Oxford, UK	BSI, ACCU
21-24	Oct 2003	Kona, HI USA	ANSI, Plum Hall
29-02	Mar/Apr 2004	Sydney, Australia	SA, Whitesmiths, Dinkumware
25-29	Oct 2004	Redmond, WA USA	ANSI, Microsoft
04-08	Apr 2005	Lillehammer, Norway	SN, RAP, Dinkumware
25-28	Sep 2005	Mt Tremblant, Canada	SCC
27-31	Mar 2006	Berlin, Germany	DIN, SAP
23-27	Oct 2006	Portland, OR USA	ANSI, Intel Corp
23-26	Apr 2007	London, UK	BSI
08-11	Oct 2007	Kona, HI USA	ANSI, Plum Hall
14-18	Apr 2008	Delft, Netherlands	NIN, ACE
08-12	Sept 2008	Santa Clara, CA USA	ANSI, Cisco Systems
30-04	Mar/Apr 2009	Toronto, Canada	SCC, IBM
26-30	Oct 2009	Santa Cruz, CA USA	ANSI, Plantronics
19-23	Apr 2010	Florence, Italy	Università Firenze
01-05	Nov 2010	Batavia, IL USA	ANSI, Fermi Lab.
14-18	Mar 2011	London, UK	BSI
24-28	Oct 2011	Washington DC, USA	ANSI, Blue Pilot
13-17	Feb 2012	Kona, HI USA	ANSI, Bloomberg LP
11-13	Jun 2012	Web Conference	ISO, Blue Pilot
22-26	Oct 2012	Portland, OR USA	ANSI, Intel
23-26	Apr 2013	Delft, NL	NIN, ACE
30-03	Sep/Oct 2013	Chicago, IL USA	ANSI, DRW Trading Group
07-11	April 2014	Parma, IT	UNINFO, Univ. of Parma
27-30	Oct 2014	St. Louis, MO USA	ANSI, Seymour
13-17	April 2015	Lysaker, NO	SN, Cisco

#### 4.5. FUTURE MEETINGS

26-30	Oct 2015	Kona HI, USA	ANSI, Plum Hall
11-14	Apr 2016	London, UK	BSI