Business Plan and Convener’s Report
ISO/IEC JTC 1/SC 22/WG 14 (The Programming Language C)

Document:
ISO/IEC JTC 1/SC 22/WG 14 N1843

Date:
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PERIOD COVERED:
July 2013 – July 2014

SUBMITTED BY:
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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. (Actual published date 2014/07/15)

1.2.2. PROJECTS UNDERWAY
JTC 1 NP 18661-(2, 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 of TS 17961 address important issues that benefit the entire C community.

WG14 is currently working on TS 18661 parts 2, 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 28 open defect reports logged against 9899:2011 and 1 open defect report on TS 17961.
- WG 14 published the Technical Specification 17961.
- WG 14 published the Technical Specification 18661 part I.
- WG 14 successfully moved Technical Specification 18661 part II to DTS ballot, see SC 22/N 4914.
- WG 14 successfully moved Technical Specification 18661 part III to PDTS ballot, see SC 22/N 4920.
- WG 14 successfully moved Technical Specification 18661 part IV to PDTS ballot, see SC 22/N 4921.
- WG 14 has started a study group to study approaches to adding parallel programming to the language.
- WG 14 has moved many documents to the ISO e-committee, and is trying to make this system work.\(^1\)

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.

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, 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 has also keeps appraised of the requirements of the LIA-1, 2 standards.

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\(^1\) The ISO Help Desk (Dorothée Studler) actually did the copy operation, it seems this mandated system can only copy one file at a time, there is no drag/drop feature or manual copy feature.
WG14 liaisons appointments are:

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<thead>
<tr>
<th>Group</th>
<th>Name/Type</th>
<th>Person(s) assigned</th>
</tr>
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<tbody>
<tr>
<td>WG 21</td>
<td>C++</td>
<td>Group liaison assigned²</td>
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<tr>
<td>FSG</td>
<td>Free Standard Group</td>
<td>Nick Stoughton</td>
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<td>WG 23</td>
<td>Vulnerabilities</td>
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<tr>
<td>MISRA-C</td>
<td>Category-C Liaison</td>
<td>Clive Pygott</td>
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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.
- Developing TS 18661 parts 2, 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 four published Technical Reports TR 18037, TR 19769, TR 24731–1, 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**

None.

² Intel, Oracle, Plum Hall, and Perennial.
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), John Benito (Backup Project Editor)

JTC 1 NP 19769, *Specification for Additional Character Data Types to the Programming Language C.*

John Benito (Project Editor)

JTC 1 NP 24731, *Extensions to the C Library – Part I: Bounds-checking interfaces*

John Benito (Project Editor), P. J. Plauger (Backup Project Editor)

JTC 1 NP 24731, *Extensions to the C Library – Part 2: Dynamic Allocation Functions.*

John Benito (Project Editor)

JTC 1 NP 24732, *Extensions for the programming language C to support decimal floating point arithmetic*

Edison Kwok (Project Editor), P. J. Plauger (Backup Project Editor)

JTC 1 NP 24747, *Extensions for the Standard Library of the Programming Language C to Support Mathematical Special Functions*

John Benito (Project Editor), P. J. Plauger (Backup Project Editor)

JTC 1 NP 17961, *C Secure Coding Rules*

Robert Seacord (Project Editor), John Benito (Backup Project Editor)

JTC 1 NP 18661, *Floating-point extensions for C*

James Thomas (Project Editor)

4.3. ELECTRONIC DOCUMENT DISTRIBUTION

WG 14 has conducted some of its detailed technical discussion using email 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](http://example.com) provided by courtesy of the Copenhagen University College of Engineering, Danish UNIX Users Group and Keld Simonsen. WG 14 has also started the move to the ISO mandated site.

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3 Currently not listed in the ISO global directory.
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.

4.4. RECENT MEETINGS

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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, University of Parma

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4.5. FUTURE MEETINGS

27-30 Oct 2014 St. Louis, MO USA ANSI, Seymour
13-17 April 2015 Lysaker, NO SN, Cisco
26-30 Oct 2015 Kona HI, USA ANSI, Plum Hall