

# WG21 2020-11 Virtual Meeting

## Minutes of Meeting

ISO/IEC JTC1 SC22 WG21 N4877 — 2020-11-19

Nina Dinka Ranns, [dinka.ranns@gmail.com](mailto:dinka.ranns@gmail.com)

09 November 2020

Chair John Spicer

### 1. Opening activities

John Spicer opens the meeting at 11:02 AM UTC-5

#### 1.1. Opening comments (PL22.16)

John Spicer presents.

#### 1.2. Meeting guidelines

John Spicer presents

Every participant is responsible for understanding and abiding by the following:

[The INCITS Antitrust Guidelines](#) (PL22.16)

[The INCITS Patent Policy](#) (PL22.16)

[The ISO Code of Conduct](#)

[The IEC Code of Conduct](#)

[The WG21 Practices and Procedures, and Code of Conduct](#)

John Spicer presents the meeting guidelines. Please make sure you are familiar these documents. The links are on the wiki.

If you have any questions or concerns about CoC issues, please approach a committee officer or a NB representative and bring it to their attention. If you have any technical issues or concerns, please bring them up as soon as possible.

### 1.3. [The ISO Code of Conduct:](#)

ISO requires that, through 2020, committees provide an opportunity to discuss the code of conduct.

John presents ISO CoC slides.

If you believe a violation has been committed, you can report it to @conduct, as well as committee officers.

### 1.4. Membership, voting rights, and procedures for the meeting (PL22.16)

John presents voting rights.

If you are representing an organization that is considering formally joining PL22.16, or your organization is already a member and you wish to change your voting status, please inform an officer.

Please sign the virtual attendance sheet which can be found in the chat and on the wiki page.

John instructs how to vote using the telecon client.

### 1.5. Introductions

Officers introduce themselves.

New members introduce themselves.

### 1.6. Agenda review and approval (PL22.16 motion, WG21 poll)

The meeting goals described above are derived from the schedule adopted in 2020 and described in: [P1000R4](#)

The primary goal of this meeting will be to provide any necessary status updates and conduct straw polls proposed for working draft changes.

John presents the agenda. Suggestion in the room for amending the agenda to remove the titles of documents in the INCITS polls.

PL22/16 motion to approve the meeting agenda.

Jonathan Wakely Moves

Juan Alday seconds.

The motion is unanimously approved by PL22/16.

WG21 motion to approve the meeting agenda.

The motion is unanimously approved by WG21.

## 1.7. Editor's reports, approval of working drafts

Document	Editor's report	Prospective WD
C++20 Standard	<a href="#">N4867</a>	<a href="#">N4868</a>
Library Fundamentals TS	<a href="#">N4854</a>	<a href="#">N4853</a>

WG21 motion to approve the working drafts.

The motion is unanimously approved by WG21.

## 1.8. Approval of the minutes of the previous meetings (PL22.16 motion, WG21 poll)

Note: The Prague minutes and pre-meeting telecon were updated on November 9th. The Prague minutes were changed to correct the NB affiliation of two members. The telecon minutes corrected two typos.

Meeting	Minutes
WG21 Prague	<a href="#">N4870</a>
PL22.16 Prague	<a href="#">pl22.16-2020-00002</a>
WG21 pre-November Virtual administrative telecon	<a href="#">N4871</a>

PL22/16 motion to approve the minutes.

Hubert Tong moves.

Daveed Vandevoorde seconds.

The motion is unanimously approved by PL22/16.

WG21 motion to approve the working drafts.  
The motion is unanimously approved by WG21.

## 2. Liaison reports, and WG21 study group reports (see pre-meeting WG21 telecon minutes)

No discussion.

## 3. WG progress reports (Core, Evolution, Library, Library Evolution; see pre-meeting WG21 telecon minutes)

No discussion.

## 4. New business requiring action by the committee

No discussion.

## 5. Discussion and Straw Polls

### 5.1. Core Straw Polls

**1. Accept as Defect Reports all issues in P2238R0 (Core Language Working Group "tentatively ready" Issues for the November, 2020 virtual meeting) and apply the proposed resolutions to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**2. Apply the changes in P0330R8 (Literal Suffix for (signed) size\_t) to the C++ working paper.**

There are objections in the room

Herb reminds of the voting rules.

In favour : 53

Opposed :1

Abstain : 11

Re-taking the vote due to technical issues with the telco client.

In favour : 53

Opposed :1

Abstain : 12

Motion passes

**3. Apply the changes in P2096R2 (Generalized wording for partial specializations) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**4. Apply the changes in P2029R4 (Proposed resolution for core issues 411, 1656, and 2333; numeric and universal character escapes in character and string literals) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**5. Apply the changes in P1787R6 (Declarations and where to find them) to the C++ working paper. (These changes resolve core language issues**

**36 110 138 191 255 271 279 338 360 386**  
**399 405 418 536 554 562 563 600 607 852**  
**952 1028 1200 1252 1291 1478 1500 1616 1729 1771**  
**1818 1820 1821 1822 1828 1829 1835 1837 1839 1841**  
**1884 1894 1896 1898 1900 1907 1908 1936 2007 2009**  
**2058 2062 2065 2070 2165 2199 2213 2331 2370 2396**  
**2413**

In addition, issues

**325 361 1089 1635**

are partially resolved.)

No objection to unanimous consent.

Motion passes.

## 5.2. Library Straw Polls

### **Library Fundamentals**

**1. Apply the changes for Issue 3413 in P2236R0 (C++ Standard Library Issues to be moved in Virtual Plenary, Nov. 2020) to the Library Fundamentals TS working paper.**

No objection to unanimous consent.

Motion passes.

### **Networking**

**2. Apply the changes for Issue 3443 in P2236R0 (C++ Standard Library Issues to be moved in Virtual Plenary, Nov. 2020) to the Networking TS working paper.**

No objection to unanimous consent.

Motion passes.

### **Issues**

**3. Apply the changes for all Ready and Tentatively Ready issues in P2236R0 (C++ Standard Library Issues to be moved in Virtual Plenary, Nov. 2020), except for issues 3413 and 3443, to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

### **C++23**

**4. Apply the changes in P1679R3 (string contains function) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**5. Apply the changes in P0881R7 (A Proposal to add stacktrace library) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**6. Apply the changes in P2227R0 (Update normative reference to POSIX) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**7. Apply the changes in P1048R1 (A proposal for a type trait to detect scoped enumerations) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

**8. Apply the changes in P0943R6 (Support C atomics in C++) to the C++ working paper.**

No objection to unanimous consent.

Motion passes.

## 6. Closing activities

### 6.1. Other business

Herb Sutter presents results of the WG21 pulse poll.

### 6.2. PL22.16 motions, if any

John reminds of voting rights for PL22.16

- 1) **Move that PL22.16 adopts the Systematic Review for ISO/IEC 29124:2010 (~~vers2~~)**

~~Special Motion~~ to withdraw that Standard per document [pl22.16-2020-00006-001](#).

Bryce Adelstein LeBach moves.  
Daveed Vandevorde seconds.

In favour: 32  
Against: 0  
Abstain: 0

Motion approved.

- 2) **Move that PL22.16 adopts the Systematic Review for ISO/IEC TS 21425, C++ Extensions for Ranges to withdraw that Technical Specification per document [pl22.16-2020-00007-001](#)**

Daveed Vandevorde moves.  
Bryce Adelstein LeBach seconds.

In favour: 33  
Against: 0  
Abstain: 0

Motion approved.

- 3) **Move that PL22.16 adopts the Systematic Review for ISO/IEC TS 21425, C++ Extensions for Ranges to withdraw that Technical Specification per document [pl22.16-2020-00007-001](#)**

Daveed Vandevorde moves.  
Bryce Adelstein LeBach seconds.

In favour: 33  
Against: 0  
Abstain: 0

Motion approved.

## 7. Plans for the future (PL22.16)

### 7.1. Next and following meetings

2021-2-?: Virtual



~~2021-05-31/06-05: Varna Bulgaria (tentative)~~

Herb presents : we will likely not meet in Varna. More details soon in an email to the meeting reflector.

Herb presents. It's unlikely that we will have any face to face meetings next year. We will continue to meet virtually.

2022-02-07 to 12: Portland, OR, USA; Intel (tentative)

## 7.2. Mailings

Note: These are the closest regular mailings and not special pre/post meeting mailings.

2020-11-15: Post-November

2020-01-15: Pre-February

## 8. Adjournment (PL22.16 motion)

Walter Brown presents.

Thank you to the hosts that haven't and won't be able to host us.

Thank you to all the people who have made the meetings possible and to everyone who has been involved.

All : thank you to Walter Brown for all the contributions.

PL22.16 motion to adjourn.

Daveed Vandevoorde moves.

Hubert Tong seconds.

Approved by unanimous consent.

John Spicer adjourns the meeting at 12:29 pm UTC - 5.

Name	Organisation	National Body
Aaron Ballman	Intel	United States
Alexandru Voicu	AMD	United States
Alisdair Meredith	Bloomberg LP	United Kingdom
Andreas Weis	BMW AG	Germany

Andrew Sutton	Lock3 Software	United States
Antony Peacock	Maven Securities	United Kingdom
Antony Polukhin	Yandex	Russia
Attila Farkas Fehér	Bloomberg LP	United States
Balint Joo	Oak Ridge National Laboratory (ORNL)	United States
Barry E Hedquist	Perennial, Inc.	United States
Barry E Hedquist	Perennial, Inc.	United States
Barry Revzin	Jump Trading	United States
Ben Caimano	MongoDB	United States
Ben Craig	NI	United States
Benjamin Saks	Saks & Associates	United States
Bill Ash	INICTS	United States
Billy Baker	FlightSafety Internation	United States
Bjarne Stroustrup	Morgan Stanley	United States
Bob Steagall	KEWB Computing	United States
Botond Ballo		Canada
Bronek Kozicki	BSI	United Kingdom
Bruno Cardoso Lopes	Facebook	United States
Bryan St. Amour	Tessonics	Canada
Bryce Adelstein Lebach	NVIDIA	United States
Chandler Carruth	Google, Inc	United States
Christian Trott	Sandia National Laboratories	United States
Christof Meerwald	Programming Research	United States
Colin MacLean	LBNL	United States
Corentin Jabot		France
Daisy (formerly David) Hollman	Sandia National Labs	United States
Damien Lebrun-Grandie	Oak Ridge National Laboratory	United States

Dan Raviv	Sound Radix	Israel
Daniela Engert	GMH Prüftechnik GmbH	Germany
Daniela Engert	GMH Prüftechnik	
Daveed Vandevoorde	Edison Design Group	United States
David Olsen	NVIDIA	United States
David Sankel	Bloomberg	United States
Davis Herring	Los Alamos National Laboratory	United States
Detlef Vollmann	vollmann engineering gmbh	Switzerland
Dr Peter TB Brett	Cadence Design Systems	United Kingdom
Drew Dormann	Aquatic	United States
Ellen Herrick	EDG	United States
Eric Niebler	Facebook	United States
Erich Keane	Intel Corporation	United States
Fabio Fracassi	CODE University of Applied Science	Germany
Faisal Vali		United States
Felix Hellmann		Germany
Florian Sattler		Germany
Frank Birbacher	Bloomberg L.P.	United Kingdom
Gabriel Dos Reis	Microsoft; Microsoft France	France
Gašper Ažman	Citadel Securities	United Kingdom
Graham Lopez	NVIDIA	United States
Guy Davidson	Creative Assembly	United Kingdom
Hal Finkel	US Department of Energy	United States
Hana Dusíková	AVAST	Czech Republic
Herb Sutter	Microsoft	United States
Howard Hinnant	Ripple	United States
Hubert Tong	IBM Corporation	Canada

Inbal Levi	Solar Edge	Israel
Jason Carey	MongoDB	United States
Jason Merrill	Red Hat	United States
JC van Winkel	Google	Netherlands
Jean-Paul RIGAULT	Université Côte d'Azur and INRIA	France
JeanHeyd Meneide	NEN	Netherlands
Jeff Garland	CrystalClear Software, Inc	United States
Jens Maurer	Edison Design Group	United States
JF Bastien	Toyota Research Institute— Advanced Development	Canada
John Spicer	Edison Design Group	United States
Jonathan Caves	Microsoft Corporation	United States
Jonathan Wakely	IBM	United Kingdom
Joshua Berne	Bloomberg LP	United States
Juan Alday	GreenWireSoft	United States
Kelly Walker	Stellar Science Ltd Co	United States
Lars Gullik Bjønnes	Cisco	United States
Loic Joly	SonarSource	France
Łukasz Wojakowski	PKN	Poland
Maged Michael	Facebook	United States
Mark Hoemmen	Stellar Science	United States
Mateusz Pusz	Train IT	Poland
Mateusz Pusz	EPAM Systems	United States
Matthew Butler	Laurel Lye	United States
Matthias Kretz	GSI Helmholtz Centre for Heavy Ion Research	Germany
Michael Florian Hava	RISC Software GmbH	Austria
Michael Garland	NVIDIA	United States
Michael Park	Facebook	Canada

Michael Spertus	Amazon	United States
Michał Dominiak	Nvidia	Poland
Mike Herrick	Edison Design Group	United States
Nathan Sidwell	Facebook	United Kingdom
Neil Horlock	Zyxt Technology	United Kingdom
Nemanja Boric	Amazon Corporate LLC	United States
Nevin Liber	Argonne National Laboratory	United States
Nicolai Josuttis		Germany
Nina Ranns	Edison Design Group	United Kingdom
Pablo Halpern	Halpern-Wight Software, Inc.	United States
Patrice Roy	Université de Sherbrooke	Canada
Paul Preney	University of Windsor / SHARCNET	Canada
Philip Craig	BSI C++	United Kingdom
Richard Smith	Google	United States
Robert Allan Hennigan Leahy	MayStreet Inc.	Canada
Robert Douglas	Aquatic	United States
Robert J. Simpson	Qualcomm Technologies Inc.	United Kingdom
Roger Orr		United Kingdom
Sebastian Büttner		Germany
Shuo Feng Liu	IBM Canada Ltd.	Canada
Stephen Scott Schurr	Ripple	United States
Steve Downey	Bloomberg LP	United States
Thomas Köppe	Google DeepMind	United Kingdom
Thomas Richard William Scogland	LLNL	United States
Thomas Wise	Microsoft	United States
Tim Costa	NVIDIA	United States
Tim Song	Jump Trading	United States

Timur Doumler		United Kingdom
Tom Honermann	Synopsys, Inc.	United States
Tony Van Eerd	Christie Digital	Canada
Tristan Brindle	BSI	United Kingdom
Tyler Sutton	Lock3 Software	United States
Vassil Vassilev		Bulgaria
Victor Zverovich	Facebook	United States
Ville Voutilainen	The Qt Company	Finland
Walter E. Brown		United States
Wesley Maness	Schonfeld	United States
William A. Seymour		United States
WILLIAM M MILLER	Edison Design Group	United States
Wuping Xin	KLD Engineering, P. C.	United States
Wyatt Childers	Lock3 Software	United States
Yevgen Maltsev	TOPIC software development	Netherlands
Zachary Henkel	Microsoft	United States
Zhihao Yuan	SimpleRose Inc	United States
Michael Wong	Codeplay	Canada
Dietmar Kuhl	Bloomberg	United States
John Lakos	Bloomberg	United States
Lee Howes	Facebook	United States
Mitsuhiro Kubota		Japan
Sam Goodrick	Lock3 Software	United States
Olivier Giroux	NVIDIA	Unites States