

# C and C++ Compatibility Study Group

## Meeting Minutes (Feb 2021)

Reply-to: Aaron Ballman (aaron@aaronballman.com)

Document No: N2664

SG Meeting Date: 2021-02-09

Tue Feb 9, 2021 at 1:00pm EST

### Attendees

Aaron Ballman	WG14 WG21	chair
David Olsen	WG21	
Tom Honermann	WG21	
Martin Uecker	WG14	
Bjarne Stroustrup	pre-14 WG21	
Christof Meerwald	WG21	
Jens Maurer	WG21	
Clive Pygott	WG14 (21)	
JeanHeyd Meneide	WG14 WG21	assistant chair
Zhihao Yuan	WG21	
Michael Wong	(14) WG21	
Hubert Tong	(14) WG21	
Hans Boehm	(14) WG21	
Mitsuhiro Kubota	WG21	
Jens Gustedt	WG14 (21)	
Richard Smith	WG21	assistant chair
Thomas Köppe	(14) WG21	assistant chair
Miguel Ojeda	WG14 WG21	
Robert Seacord	WG14	
Will Wray	(14) (21)	scribe

Code of Conduct: follows ISO, IEC, and WG21 CoCs (no current WG14-specific CoC)

### Agenda

Discussing the following papers:

P2274R0 "C and C++ Compatibility Study Group" (<http://wg21.link/p2274r0>)

P2264R0 "Make assert() macro user friendly for C and C++" (<http://wg21.link/p2264r0>) (was not presented - tabled for the next meeting)

### P2274 Introduction

AB: This document is about how to get work done, how the liaison group will operate. To protect the shared space of C and C++ so that C++ can evolve with the intersection more visible so that impacts of change are flagged more quickly. This group provides a feedback loop. It is not about driving work not a route for proposals to bypass one committee or gating proposals. The Group aims to help authors with their work, to make informed decisions on impact of proposals on both languages. Guidance on how to make proposals palatable for the respective WG audiences. A review group, study group, to strengthen proposals. Most members are on one or other committee, some both. Partisanship is a challenge - the group has to be stewards of both. A bridge over the gaps between the committees. The paper explains how the two committees work with drastically different practices. Both have systems to drive work into wording. There is no ISO notion of a Joint Study Group. This is registered as both a WG14 and WG21 SG, with the same chair and co-chair. There is awkwardness in document submissions and approvals.

AB: I can submit SG docs into both systems for anyone who needs the help - there will be more guidance for authors - C++ has a more onerous system, requiring an account - for now can email A.B. for assist.

pause for comments

MW: Fantastic. Long time needed. There has been significant divergence. One of Michael's roles was 'official liaison' (so is relieved to be hanging up that hat). Will we find time to go over troublesome intersection (attributes, type punning, atomics, threads, static inline functions?)

JG: Yes - a big paper incoming "A common C/C++ core specification" too big to handle in this group needs a concise view of what needs repair

WW: Paper lacks a strong motivation section - Why is C and C++ compatibility important?

AB: While the languages evolve separately there is financial impact of incompatibility both for implementers and for users. We can avoid user pain and expense via collaboration. So far the process has been passive - authors or others notice potential for incompatibility and raise a flag - sometimes without reaction.

MU: Particular problems including some headers. Can we define goals? What specifically to work on? Set priorities based on gauging impact?

BS: There's a need to avoid accidental incompatibility. Informal exchanges on changes sometimes are okayed - some say there'll be no impact, yet then there is. This level of diligence is hard to achieve - respective standards documents have diverged ever since edits were made to DR's notes. Need to agree where in the common subset to seek solutions.

AB: summing up; State underlying goals, there's no mission statement yet written up.

MW: (change of mind) It's more important to stop deviations ahead than working to fix back compatibility issues.

HB: writes WG21 proposals, hard to know if WG14 accepts - is this the forum for such?

AB: Yes - hope to be the place for such feedback, a way to get earlier review, but won't get full f/b until full committee reading.

BS: C++ willing to break to increase C compatibility. It is not easy or realistic to fix past breakages.

AB: Agree - keeping compatible ahead a better goal.

JG: Hope to do both. Some stupid incompatibilities we should try to solve. Also, like HB, wants feedback from other WG.

AB: This would be a big win for many (fixing stuff)

BS: Yes, but extremely hard.

AB: Committees have a different level of pain in contemplating breaking changes.

BS: Even if all agree, it may still be hard or expensive.

JG: Think C has made progress on compatibility not so pessimistic, more pragmatic, do it.

AB: Some changes in WG14 to reunify with WG21 e.g. stdbool.h have to be careful of breaking existing code.

ZY: Discussion so far centered on language incompatibility. Hope also to address implementation or ecosystem where incompatibilities can cause greater problems. such compiler extensions, e.g. C features entering C++ and C++ features entering C can be very different and cause difficult problems.

AB: Reminder: N-numbered docs are destined for both WGs but are NOT unique between, so have to be submitted to both. So - put "WG14" / "WG21" before the document number.

BS: Please publish links to papers location - for bookmarking, so it won't be lost.

AB: The group provides guidance only, no power of veto. Can send papers on the suitable group. Not to 'kill off' papers.

AB: On quorum and consensus --- WG14 and WG21 are hugely different in size. Don't want a room with imbalance - too few of one. Will require at least two from each WG. Each straw poll will be done twice, once for each. Consensus only if both polls agree (members of both WG have two votes).

BS: Will need trial and refinement.

AB: Expected. This is not set in stone. Mutual respect is the one hard and fast rule. It will be an interesting process. Some papers will be targeted directly at this Compat group others will come via WG21 submission process checkbox or simply referred by email. WG14 have plans / hopes to improve their document system.

**P2246** (author not in attendance to present the paper)

JHM: offers to present - it's not complicated.

BS: best not to - easy to get unintended consequences.

TH: agree - table the paper for next meet.

## Wrapup

AB: what kind of schedule do we want? monthly? more often, less often?

TK, AB, TH, JG: Monthly, recurring date TBD by calendar

BS: Very important to have possible incompatibilities reviewed on both sides.

AB: E.g. - already accepted papers ?

BS: Can politely encourage authors to submit for joint compat review. Can't pull back accepted papers. Spread message to promote this group "We are here if you need us"

HB: atomics doc - won't be a short discussion already in WG21 pending tweaks

AB: Will help immensely if there's something to look at. Like BS suggests: Let's spread the word.

MW: N2573 latest C wording

JHM: N2596 newer (links) Front matter has list of accepted papers with short one-line descriptions -> a good quick source list for incompatibility checks. Mixed string-literal incompat already done for both. Some attribute work (fallthrough, deprecated...) Free position of labels N2508 Binary literals N2459 More coordination from this group is good

BS: Overload likely - more work than time. Pick off best, no chance to do all.

End on time.

## Zoom chat

JHM: new WG14 doc system ~ March

ZY: Compound literals ...

JHM: Compound literals and `__VA_OPT__`

TH: SG16 unicode and text

TK: ... `__VA_OPT__` on my plate ... apologies