

WG21 2018-06 Rapperswil Minutes

ISO/IEC JTC1 SC22 WG21 N4753 — 2018-12-06

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June 4 - June 9, 2018 - Rapperswil, Switzerland

Chair John Spicer

1. Opening activities

John spicer opened the meeting at 9:00 CEST.

1.1 Opening comments, welcome from host

Peter welcomes the group and presents the information about the location of the meeting and evening activities.
Thank you to the sponsors.

John presents schedule for the meeting. Working groups will meet until Friday. Plenary is scheduled for Saturday at 8:30 am CEST. There are several evening sessions scheduled.

John presents meeting goals. The primary goals of this meeting will be:

- Work on C++20 features
- Resolve NB comments for the parallelism 2 TS

Additional, lower-priority goals include:

- Merge the foundational concepts (only) from the Ranges TS into the C++20 working draft, continuing to refine it in the IS draft and adopting its issues list into the main issues lists
- Merge the Coroutines TS into the C++20 working draft, continuing to refine it in the IS draft and adopting its issues list into the main issues lists

1.2 Meeting Guidelines

Every participant is responsible for understanding and abiding by the [INCITS Anti-trust Guidelines](#) and [Patent Policy](#) and the [ISO Code of Conduct](#).

Hal Finkel reminds participants to sign in the attendance sheet. During the meeting there will be a google form setup for P paper numbers on the meeting wiki page.

1.3 Membership, voting rights, and procedures for the meeting

Those considering joining PL22.16 please inform the Chair, John Spicer, Vice-Chair, Hal Finkel, or IR, Barry Hedquist.

1.4 Introductions

11 national bodies present : Bulgaria, Canada, Finland, France, Germany, Netherlands, Spain, Switzerland, Russia, United Kingdom and US.

There is a member from Poland, but only as an observer.
There are members from South Africa, China and Italy, but they do not represent national bodies.

Herb reminds of the voting rules.

1.5 Agenda review and approval

John presents the agenda for the meeting. The agenda is available on wiki.

Barry Hedquist moves. Marshall Clow seconds.
The motion is unanimously approved by PL22/16.
The motion is unanimously approved by WG21.

1.6 Editor's reports, approval of working drafts

There is no document for the Library Fundamentals to approve yet.

Document	Editor's report	Prospective WD
C++20 Standard	N4749	N4750

Coroutines TS	N4737	N4736
Networking TS	N4735	N4734
Parallelism v2 TS	N4743	N4742
Reflection TS	N4747	N4746
Library Fundamentals TS	None	None

Motion to approve the editor report and working drafts.
 Marshall Clow moves, Barry Hedquist seconds.
 The motion is unanimously approved by PL22/16.
 The motion is unanimously approved by WG21.

1.7 Approval of the minutes of the previous meetings

Motion to approve the minutes from the previous meeting.
 Barry Hedquist moves, Aaron Ballman seconds.
 The motion is unanimously approved by WG21.

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

Already summarised in the pre-meeting minutes.

3. WG progress reports and work plans for the week (Core, Evolution, Library, Library Evolution; see pre-meeting WG21 telecon minutes)

Already summarised in the pre-meeting minutes.

Marshall Clow said there will be an LWG issues processing evening session, no day settled yet. The day will be scheduled today and be visible on the meeting wiki under the evening sessions.

Titus Winters said LEWG is missing the scribe, please volunteer.

SG1 and LEWG will have a joint session on executors. SG1 has a tentative schedule only right now.

SG12 will meet with EWG and LEWG for a paper on undefined behaviour after the plenary.

EWG and LEWG will meet to discuss string view after the plenary.

4. New business requiring action by the committee

Herb Sutter said the Parallelism ballot finished last week. Thank you to everyone who participated. No official results back yet.

5. Organize working groups and study groups, establish working procedures

Jens Maurer presents WG meeting rooms assignments.

6. WG and SG sessions

SG16 will not meet this time.

SG7 is still working on the schedule.

SG6 will not meet this time.

SG13 is not active and will not meet.

Evening session schedule is on the meeting wiki page. Evening sessions start at 7:30 pm.

The WG and SG chairs must arrange for any proposals to be written up in the form of a motion, and made available by **8:00 PM** CEST Friday.

7. Review of the meeting (Saturday 8:30 AM)

John Spicer opened the meeting at 8:30am CEST.

Herb Sutter reminds the participants that ISO meeting are not public and explains the do-s and don't-s of the meeting.
Sutter explains the voting rules.

We expect to have an extra WG21 meeting in September in Seattle area. It would be an EWG meeting focusing on modules and an SG1/LEWG meeting focusing on executors. Possible dates are Thursday/Friday (20-21 of September) and Saturday/Sunday(22-23 of September).

This is only a subgroup meeting and no papers will be voted in.

Sutter polls for the possible attendees of the EWG September meeting. There is a quorum. Preference for Thursday/Friday option.

Sutter polls for the SG1/LEWG September meeting. There is a quorum. Preference for Saturday/Sunday option.

John Spicer reminds the attendees to sign the attendance sheet

WG and SG status and progress reports.

- SG5: Transactional memory (Wong)

Wong presents.

- SG6: Numerics (Crowl)

No report.

- SG7: Compile-time programming (Carruth)

Carruth presents.

- SG10: Feature test (Nelson)

John Spicer presents.

- SG12: Undefined and unspecified behavior (Dos Reis)

Dos Reis presents SG12 update.

- SG14: Games & low latency (Wong)

Michael Wong presents.

- SG15: Tooling (Winters)

Titus Winters presents.

- SG16: Unicode (Honermann)

Corentin Jabot presents.

- SG1: Concurrency (Giroux)

Olivier Giroux presents.

- Evolution (Voutilainen)

Ville Voutilainen presents.

- Library Evolution (Winters)

Titus Winters presents.

Motion:

Move to create a new Standing Document "Standard Library Compatibility" with the contents of [P0921r2](#) "Standard Library Compatibility" as its initial content.

No discussion.

No objections.

Motion passes with Unanimous consent.

- Core (Miller)

Mike Miller presents.

CWG Motions

Motion 1

Move to accept as Defect Reports all issues in [P1113R0](#) (Core Language Working Group "ready" Issues for the June, 2018 (Rapperswil) meeting) and apply the proposed resolutions to the C++ working paper.

Approved by unanimous consent.

Motion 2

Move to accept as Defect Reports all issues in [P1114R0](#) (Core Language Working Group "tentatively ready" Issues for the June, 2018 (Rapperswil) meeting) and apply the proposed resolutions to the C++ working paper. [**PROPOSED AMENDMENT**: Move to accept as Defect Reports all issues **except 2359** in [P1114R0](#) (Core Language Working Group "tentatively ready" Issues for the June, 2018 (Rapperswil) meeting) and apply the proposed resolutions **for all issues** to the C++ working paper.]

Mike Miller proposed an amendment to the motion because one of the issues is dealing with the feature that is not in c++17 . Call out that issue to say that's not a DR but should also be adopted to the working paper.

Jens updates the motion.

No objections to the amended motion.

Amended motion passes.

Motion 3

Move to apply the changes in [P0806R2](#) (Deprecate implicit capture of **this** via [=]) to the C++ working paper.

There are objections to this motion.

Sutter reminds the room of voting rules.

Sutter polls the room.

In favour : 35

Opposed : 2

Abstained : 14

There is consensus, motion passes.

Motion 4

Move to apply the changes in [P1042R1](#) (**__VA_OPT__** wording clarifications) to the C++ working paper.

Approved by unanimous consent.

Motion 5

Move to accept [P0929R2](#) (Checking for abstract class types) as a Defect Report and apply the changes therein to the C++ working paper.

Approved by unanimous consent.

Motion 6

Move to apply the changes in [P0732R2](#) (Class Types in Non-Type Template Parameters) to the C++ working paper.

Approved by unanimous consent.

Motion 7

Move to apply the changes in [P0912R2](#) (Merge Coroutines TS into C++20 working draft) to the C++ working paper.

No discussion.

There are objections to the motion.

Sutter polls the room.

In favour : 29

Opposed : 15

Abstained : 8

Sutter polls national bodies.

Hedquist polls US voting members:

In favour :20

Opposed : 6

Abstained: 7

WG21 national bodies voted in the following way :

Bulgaria abstains.

Canada opposed.

Finland in favour.

France in favour.

Germany opposed.

Netherlands in favour.

Russia in favour.

Spain in favour.

Switzerland opposed.

UK opposed.

US in favour.

There is no consensus. Motion doesn't pass.

Gor Nishanov asked the opposing national bodies to send comments with changes they would like to see.

Motion 8

Move to apply the changes in [P1025R1](#) (Update The Reference To The Unicode Standard) to the C++ working paper.

Approved by unanimous consent.

Motion 9

Move to apply the changes in [P0528R3](#) (The Curious Case of Padding Bits, Featuring Atomic Compare-and-Exchange) to the C++ working paper.

Approved by unanimous consent.

Motion 10

Move to apply the changes in [P0722R3](#) (Efficient sized delete for variable sized classes) to the C++ working paper.

Approved by unanimous consent.

Motion 11

Move to apply the changes in [P1064R0](#) (Allowing Virtual Function Calls in Constant Expressions) to the C++ working paper.

Approved by unanimous consent.

Motion 12

Move to apply the changes in [P1008R1](#) (Prohibit aggregates with user-declared constructors) to the C++ working paper.

There are objections in the room.
Sutter polls the room.

In favour : 28
Opposed : 2
Abstained : 19

There is consensus, motion passes.

Motion 13

Move to apply the changes in [P1120R0](#) (Consistency improvements for `<=>` and other comparison operators) to the C++ working paper.

Approved by unanimous consent.

Motion 14

Move to apply the changes in [P0542R5](#) (Support for contract based programming in C++) to the C++ working paper.

d:

There is discussion on how this feature would be used in the standard library.

There are objections in the room.

Sutter polls the room.

In favour : 35

Opposed : 3

Abstained: 14

There is consensus, motion passes.

Motion 15

Move to apply the changes in [P0941R2](#) (Integrating feature-test macros into the C++ WD (rev. 2)) to the C++ working paper.

There are objections in the room.

Sutter polls the room.

In favour : 42

Opposed : 2

Abstained : 10

There is consensus, motion passes.

Motion 16

Move to apply the changes in [P0892R2](#) (explicit(bool)) to the C++ working paper.

There are objections in the room.

Sutter polls the room.

In favour : 40

Opposed : 1

Abstained: 13

There is consensus, motion passes.

- Library (Clow)

Marshal Clow presents.

If there is a quorum, LWG will have another meeting in Batavia on August 20th.

Clow polls the room. There is a quorum.

Agreement that this will be an official meeting, but there wouldn't be any motions.

The motions would be postponed until San Diego.

Parallelism 2 TS

Motion 1

Move to apply to the Parallelism 2 TS working paper the proposed wording in [P0964R2](#) (Finding the right set of traits for simd<T>).

Approved by unanimous consent.

Motion 2

Move to apply to the Parallelism 2 TS working paper the proposed wording in [P1111R0](#) (Resolutions to NB Comments on the Parallelism TS v2).

Approved by unanimous consent..

Motion 3

Move to apply to the Parallelism 2 TS working paper the proposed wording in [P0820R4](#) (Feedback on P0214).

Approved by unanimous consent.

Motion 4

Move to apply to the Parallelism 2 TS working paper the proposed wording in [P1118R0](#) (Concat and Split on simd<> objects).

Discussion on whether this covers an NB comment.

Approved by unanimous consent.

Motion 5

Move to appoint an review committee composed of Bryce Adelstein Lelbach, Matthias Kretz, and Marshall Clow to approve the correctness of the Technical Specification for C++ Extensions for Parallelism Version 2 working paper as modified by the motions approved at this meeting, and to direct the Convener to transmit the approved updated working paper for publication.

Sutter states Jared (Hoberock) is the editor.

Approved by unanimous consent.

Reflection TS

Motion 6

Move to apply to the Reflection TS working paper the proposed wording in [P0670R4](#) (Function reflection).

Discussion around a case with an ODR violation ensues. The case has been resolved.

There are objections in the room.
Sutter polls the room.

In favour : 40
Opposed : 1
Abstained : 12

There is consensus, motion passes.

Motion 7

Move to appoint an review committee composed of Axel Naumann, Roger Orr, and Daniel Krügler to approve the correctness of the Technical Specification for C++ Extensions Reflection working paper as modified by the motions approved at this meeting, and to direct the Convener to transmit the approved updated working paper for PDTS ballot.

Approved by unanimous consent.

Sutter says ISO hasn't opened a working item yet. The PDTS ballot is not going to launch right away. Once the bucket opens, we will send the request for PDTS.

Coroutines TS (to be applied only if CWG motions are not adopted)

Motion 8

Move to apply to the Coroutines TS working paper the proposed wording in the section "LWG requested edits on 2018-June-08" of [P0912R2](#) (Merge Coroutines TS into C++20 working draft)

Approved by unanimous consent.

Motion 9

Move to apply to the Coroutines TS working paper proposed resolution of issue #29 in [P0664R4](#) (C++ Coroutine TS Issues)

Clow says the reason for the restriction is that this is the only issue that touches on library part.

Approved by unanimous consent.

Networking TS

Motion 10

Move to apply to the Networking TS working paper the proposed resolution of issue 3071 in [P1082R0](#) (C++ Standard Library Issues to be moved in Rapperswil).

Approved by unanimous consent.

C++20 Issues

Motion 11

Move to apply to the C++ working paper the proposed resolutions of all of the issues except 3071 in [P1082R0](#) (C++ Standard Library Issues to be moved in Rapperswil).

Approved by unanimous consent.

Motion 12

Move to apply to the C++ working paper the proposed wording in [P0475R1](#) (LWG 2511: guaranteed copy elision for piecewise construction). This resolves LWG issue #2511

Approved by unanimous consent.

C++20

Motion 13

Move to apply to the C++ working paper the proposed wording in [P0476R2](#) (Bit-casting object representations).

Approved by unanimous consent.

Motion 14

Move to apply to the C++ working paper the proposed wording in [P0788R3](#) (Standard Library Specification in a Concepts and Contracts World).

Approved by unanimous consent.

Motion 15

Move to apply to the C++ working paper the proposed wording in [P0771R0](#) (`std::function` move operations should be `noexcept`).

Clow says there was a discussion between the author and Pablo Halpern about related work that Pablo has been investigating. The author has agreed to withdraw his motion so Pablo can finish his development. If Pablo doesn't find any issues, LWG will bring this back to the motions page.

Motion 16

Move to apply to the C++ working paper the proposed wording in [P0458R2](#) (Checking for Existence of an Element in Associative Containers).

Approved by unanimous consent.

Motion 17

Move to apply to the C++ working paper the proposed wording in [P0759r1](#) (fpos Requirements).

Approved by unanimous consent.

Motion 18

Move to apply to the C++ working paper the proposed wording in [P1023R0](#) `constexpr` comparison operators for `std::array`).

Approved by unanimous consent.

Motion 19

Move to apply to the C++ working paper the proposed wording in [P0769R2](#) (Add `shift` to `<algorithm>`).

Discussion around parallel overloads ensues. The parallel overloads are included in this wording.

Approved by unanimous consent.

Motion 20

Move to apply to the C++ working paper the proposed wording in [P0887R1](#) (The identity metafunction).

Approved by unanimous consent.

Motion 21

Move to apply to the C++ working paper the proposed wording in [P0879R0](#) (Const-expr for swap and swap related functions). Also resolves LWG issue 2800.

Approved by unanimous consent.

Motion 22

Move to apply to the C++ working paper the proposed wording in [P0758R1](#) (Implicit conversion traits and utility functions).

Approved by unanimous consent.

Motion 23

Move to apply to the C++ working paper the proposed wording in [P0556r3](#) (Integral power-of-2 operations).

Approved by unanimous consent.

Motion 24

Move to apply to the C++ working paper the proposed wording in [P0019R8](#) (Atomic Ref).

Approved by unanimous consent.

Motion 25

Move to apply to the C++ working paper the proposed wording in [P0935R0](#) (Eradicating unnecessarily explicit default constructors from the standard library).

Concern about a paper relevant to this motion not being present in the motions (P1123). Agreement to bring P1123 to vote in San Diego and proceed with the original motion.

There are objections in the room.
Herb polls the room.

In favour : 31
Opposed : 2
Abstain : 15

There is consensus, motion passes.

Motion 26

Move to apply to the C++ working paper the proposed wording in [P0646R1](#) (Improving the Return Value of Erase-Like Algorithms).

Concern raised about constructors and `std::initializer_list` constructors agreeing in explicit.

No objections.
Motion passes.

Motion 27

Move to apply to the C++ working paper the proposed wording in [P0619R4](#) (Reviewing Deprecated Facilities of C++17 for C++20).

Concern raised about vendors who can't switch to C++17 because of deprecated features.

There are objections in the room.
Herb polls the room.

In favour : 31
Opposed : 2
Abstain : 19

There is consensus, motion passes.

Motion 28

Move to apply to the C++ working paper the proposed wording in [P0898R3](#) (Standard Library Concepts).

Approved by unanimous consent.

- Direction Group

Bjarne Stroustrup presents.

Richard Smith said editors are proposing a change. Look at D1076 on the wiki for the details about planned editors changes. Wording paper for the next meeting should take that paper into account

8. Closing activities

8.1 Issues delayed until today

No discussion.

9. Plans for the future

9.1 Next and following meetings

2018-11-05/10: San Diego, CA ([N4715](#))

Marshal Clow said the meeting details are in N4715. Looking forward to seeing everyone there.

2019-02-18/23: Kona, HI, US ([N4762](#))

Herb Sutter said there may be a meeting room off site during the meeting in Kona.

There is a possible meeting in Cologne in summer of 2019.

Nico Josuttis said he is looking for sponsors to help with the Cologne meeting. The meeting is likely to be 15-19 June 2019.

Sutter presents.

There will be a meeting in Belfast, 4-9 of November 2019.

Sutter thanks the editors, the editing teams and the scribes.

Thank you to Geoffrey Romer for LFST2 editing.

The committee will from now on have a project editor and an editing team
With a lead for each project.

Project editor for LFST3 is Thomas Koepp. Thank you to Thomas.

San Diego is the last meeting for c++20 proposals.

EWG plans to approve the last c++20 papers that need library response.

LWG will be progressing papers on how to react to new language features.

Sutter presents the delivery plan.

Sutter says the national bodies expressed the desire to see coroutines in C++20, despite the votes in this particular meeting. Sutter is not aware that this position has changed.

Walter Brown presents.

Thank you the host and the sponsors.

Thank you to everyone that participated and those who helped us participate.

9.2 Mailings

2018-06-25: Post-Rapperswil

2018-10-08: Pre-San Diego

10. Adjournment

Hal Finkel moves. Barry Hedquist seconds.

Spicer adjourns the meeting at 11:40 am CEST.

11. Attendance

The column "WG21" designates official PL22.16 or WG21 status ("P", "A", "E", "M")
The column "PL22.16" indicates organizations eligible to vote by "V", and advisory membership by "A".

Company / Organization	Representative		
AMD	Siu Chi Chan	A	V
AMD	Alexandru Voicu	A	
Amazon Corporate LLC	John McFarlane	A	V
Apple	Tim Northover	A	V
Argonne National Laboratory	Hal Finkel	P	V
Bloomberg	John Lakos	P	V
Bloomberg	Dietmar Kühl	A	
Bloomberg	Alisdair Meredith	A	
Bloomberg	David Sankel	A	
Bloomberg	Frank Birbacher		
Bloomberg	Jeffrey Mendeksohn		
Bloomberg	Vittorio Romeo		
Brown	Walter Brown	E	
C Plus Plus Alliance Inc	Andrzej Krzemieński	A	
Cisco Systems Inc	Lars Gullik Bjønnes	P	V
EPAM Systems Inc	Mateusz Pusz	P	V
Edison Design Group	John Spicer	P	V
Edison Design Group	Jens Maurer	A	
Edison Design Group	William Miller	A	
Edison Design Group	Daveed Vandevoorde	A	
Edison Design Group	Nina Dinka Ranns	A	
Facebook	Eric Niebler	A	V
Facebook	David Goldblatt		
Facebook	Nathan Sidwell		
Facebook	Victor Zverovich		

Company / Organization	Representative		
Google	Chandler Carruth	P	V
Google	Hans Boehm	A	
Google	James Dennett	A	
Google	Geoffrey Romer	A	
Google	Richard Smith	A	
Google	Titus Winters	A	
Google	Jeffrey Yasskin	A	
Google	Chris Kennelly		
Google	Thomas Koeppe		
Google	David Stone		
GrammaTech Inc	Aaron Ballman	P	V
GreenWireSoft	Juan Alday	P	V
IBM Corporation	Paul McKenney	P	V
Intel Corporation	Pablo Halpern	A	V
Intel Corporation	Erich Keane	A	
Jump Trading	Barry Revzin	P	
LTK Engineering Services	Alan Talbot	P	V
Lawrence Livermore National Laboratory	Christopher Earl	A	V
Linden Research, Inc	Nathaniel Goodspeed	P	V
Los Alamos National Laboratory	Li-Ta Lo	P	V
Louisiana State University	Hartmut Kaiser	P	V
Microsoft Corporation	Jonathan Caves	P	V
Microsoft Corporation	Casey Carter	A	
Microsoft Corporation	Gor Nishanov	A	
Microsoft Corporation	Gabriel Dos Reis	A	
Microsoft Corporation	Herb Sutter	A	
Microsoft Corporation	Billy R. O'Neal III		
MongoDB Inc	ADAM David Alan Martin	P	V
MongoDB Inc	Mathias Stearn	A	
Morgan Stanley	Bjarne Stroustrup	P	V
NVidia Corporation	Olivier Giroux	A	V
NVidia Corporation	Jared Hoberock	A	
NVidia Corporation	Bryce Adelstein-Lelbach	A	
NVidia Corporation	Carter Edwards		
NVidia Corporation	Marco Foco		
Oak Ridge National Laboratory	Graham Lopez	A	V
Ocient	Nevin Liber	P	V
Oracle	Paolo Carlini	P	V
Perennial	Barry Hedquist	P	V
Programming Research Ltd	Richard Corden	P	
Programming Research Ltd	Christof Meerwald	A	

Company / Organization	Representative		
Qualcomm Inc	Marshall Clow	P	V
Red Hat Inc	Jason Merrill	P	V
Red Hat Inc	Torvald Riegel	A	
Ripple Labs	Stephen Schurr	A	V
Saks & Associates	Benjamin Saks	P	V
Sandia National Laboratories	Daniel Sunderland	P	V
Sandia National Laboratories	Christian Trott	A	
Sandia National Laboratories	David Hollman		
Schonfeld Tools LLC	Romeo Ahohe	A	V
Stellar Science	Daniel Davis	A	V
Symantec	Michael Spertus	P	V
University of Akron	Andrew Sutton	P	V

Other WG21 members			
BDS	BG	Vasil Vasilev	M
Christie Digital	CA	Tony Van Eerd	M
Codeplay	CA	Michael Wong	M
IBM Corporation	CA	Shuo Feng Liu	M
IBM Corporation	CA	Hubert Tong	M
Mozilla	CA	Botond Ballo	M
CSCS	CH	Mauro Bianco	M
CERN	CH	Axel Naumann	M
HSR	CH	Peter Sommerlad	M
Vollmann Engineering	CH	Detlef Vollmann	M
	DE	Fabio Fracassi	M
	DE	Nicolai Josuttis	M
GSI	DE	Matthias Kretz	M
University Carlos III of Madrid	ES	J. Daniel García	M
CryptoTec	FI	Mikael Kilpeläinen	M
Plum Hall Inc	FI	Ville Voutilainen	M
	FR	Corentin Jabot	M
	FR	Loïc Joly	M
Université de Nice S.A.	FR	Jean-Paul Rigault	M
	GB	Chris Kohlhoff	M
	GB	Roger Orr	M
Graphcore	GB	Jon Chesterfield	M
Jetbrains	GB	Timur Doumler	M
Red Hat Inc	GB	Jonathan Wakely	M
	NL	J.C. van Winkel	M
	NO	Espen Harlinn	M
Nokia	PL	Michał Dominiak	M
	RU	Anton Polukhin	M
Yandex	RU	Aleksandr Fokin	M

Participating non-members	
ARM Ltd	Mikhail Maltsev
Auto-Intern GmbH	Odin Holmes
AVAST	Hana Dusíková
Blizzard	James Touton
BMW AG	Andreas Weis
Bruker Daltonik GmbH	Daniel Krügler
Cascade GmbH	Volker Doerr
Codeplay	Gordon Brown
Freie Universität Berlin	Hannes Hauswedell
KDAB Group	Marc Mutz
KLT Associates, Inc	John Kolbusz
Maystreet	Nathan Myers
Paris Observatory	Vincent Reverdy
SILKAN	Stéphanie Even
Sony Computer Entertainment	Michael Spencer
Xilinx	Ronan Keryell
	Pal Balog
	Eugenio Bargiacchi
	Peter Bindels
	Sebastian Büttner
	Niall Douglas
	Andreas Fertig
	Felix Hellman
	Erik S. V. Jansson
	Federico Kircheis
	Boris Kolpackov
	Chris Kormanyos
	Nicolas Lesser
	JeanHeyd Meneide
	Michal Sudwoj
	Faisal Vali
	Gevorg Voskanyan
	Mingxin Wang