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Reply-to: Ran Regev <regev.ran@gmail.com>

Reflection on SG21’s 2024 Process

Abstract

This paper suggests taking a look at the last 10 months of work at SG21 and based on that data asking questions about the quality and confidence that we have in the result of this work, namely, P2900R8 [1].

Revisions

- R0 - initial revision

Motivation

During the last year the authors of this paper felt that the process of making P2900 is too fast. Papers are sneaking in at a high rate and are processed immediately as they arrive. The authors felt that there is no time to digest the data: to compare similar ideas, to bring examples or counterexamples, to check alternatives, to discuss with fellows or to take any other actions that are required before formal discussion and polls.
It feels that decisions were taken with very little preparation time.

Intent

The intent of the paper is to add light on the process of SG21 in the last year in order to take this element into consideration when we decide what to do next with P2900. There is no intention whatsoever to deem P2900R8 is wrong, incomplet or incorrekt. We believe that when we consider adding such an important feature to the language we must do our best to look at it from all possible angles. Reflecting on the process is just another angle. By looking at it we might gain more confidence or we might get less confidence in the final paper. The important part however is that we don’t close our eyes pretending there is nothing to discuss.
Moreover, we have full confidence that all participants in SG21, including the authors of this paper, are interested in a good contract feature in C++. It is the definition of good and the way to get there that might be in contention.

Non Paper Attempts

The authors of this paper raised the rushing problem to SG21 chairs more than once - in emails, comments during discussions and even a long online discussion solely on this issue. The repeated response is that this concern is considered but rejected based on the plan agreed in P2695R1 [2]. The authors interpretation for this response is that the project consideration, namely, getting on time, is more important than the engineering consideration, namely, processing the data in a reasonable manner.

Processed Data

Source

The data presented in this document is based on:

- The papers themselves - subject and date of the paper.
- Meeting minutes [3] of both telecons and face to face meetings (Tokyo [4], St. Louis [5])
  - Discussions (specifically, the data was not taken from the agenda, but rather from the actual discussion).
  - Polls. A close look on what was polled (see below)

Collected Data [6]

- In the beginning of 2024 P2900 was in its 5th revision. Therefore -
- Polls taken by SG21 related to P2900 during 2024 were either to change P2900 or to leave it as is without modifications. Therefore -
- All polls in the analysis that are related to P2900, regardless of the result of the poll: consensus, consensus against or no consensus - are all considered as bindings. In the data they are marked as - Voted: Yes.
- Non binding polls are polls that are not related to P2900 directly. These are polls that deal with the temperature of the room, directions for the authors and alike. In the analysis below we left out discussions that resulted in non-binding polls as we think they will shed no light on the process in the aspect we would like to present. In the data they are marked as - Voted: No.
- Four D-papers were discussed and binding polls were taken for them but there is no track record for them as either the paper is missing or its date is later than the discussion date. These four papers were marked as being available at the day they were discussed (zero incubation). Discussed D-Papers that exist and have a date prior to discussion date treated as P-papers - i.e. their date represents the publication date. This last bullet may cause some bias in the results. The reader is invited to present the data biased to the other side.
- In the analysis below there is no difference between a revision of a paper and a new paper, they are counted the same. The reasoning is that a new version requires processing almost as much as a new paper does. It has all the elements of dealing with

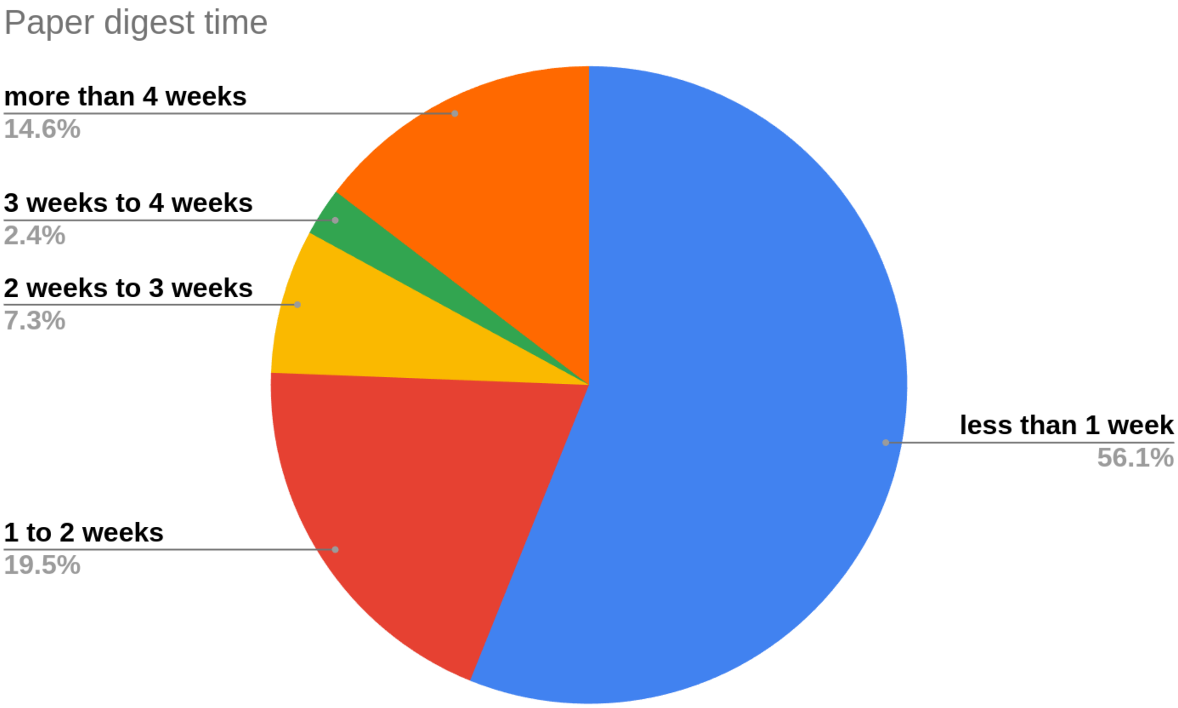
new data (otherwise what does the revision bring). The reader may want to exercise with the versioning data and present a result that treats revisions and new papers differently.

Analysis

Overall there were 63 papers discussed, 41 of them were binding, 23 were not.
The following table summarizes the times papers were published before they were discussed and polled (binding polls only):

period	no. of papers	percentage
less than 1 week	23	56.10%
1 to 2 weeks	8	19.51%
2 weeks to 3 weeks	3	7.32%
3 weeks to 4 weeks	1	2.44%
more than 4 weeks	6	14.63%
	41	100.00%

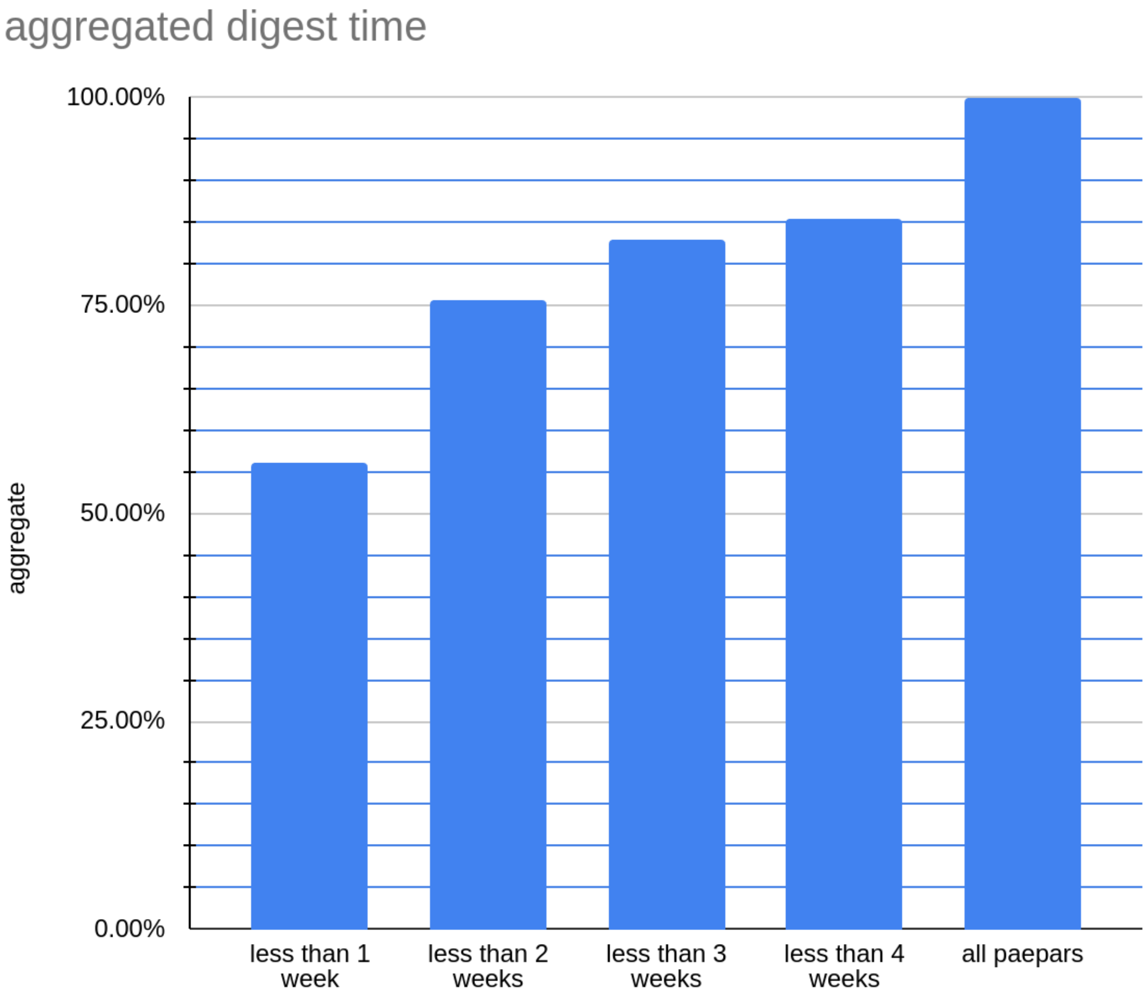
Presented In a graph:



The following table aggregates the above data:

aggregate	
56.10%	less than 1 week
75.61%	less than 2 weeks
82.93%	less than 3 weeks
85.37%	less than 4 weeks
100.00%	all papers

As a graph



Thoughts

- The authors think that this is a rushed process. Too many papers were not given enough incubation / process time before they were polled. Moreover, the huge amount of new information coming in effectively eliminated the ability to go back to issues that were already polled (because there is always a new thing to look at).

- As a general note - the major problem with rushed processes is that the participants in such a process are failing to see issues. It is not that issues that are brought in are not considered: the problem is of those issues that are left out of vision. In rushed procedures there are always issues that didn't enter into sight and therefore ignored. Note: ignored not because they were seen and ignored, ignored because they were not seen at all.
- 63 papers in 10 months means that there is an average of 6.3 new pieces of information, either as a new paper or a revision of an existing paper, to process every month. It means that participants, in order to be well informed and well involved should be updated with approximately 1.5 new pieces of information every week.
    - Is this a good rate to process new information?
    - Can we keep up the pace at this rate?
    - Can we make informed decisions based on this rate?
- More than 50% (56.1%) of the papers were merged into P2900 with a less than a week incubation time.
    - Does this increase the confidence in the final paper?
- The vast majority of the papers (75%) were processed less than 2 weeks before being incorporated into P2900.
    - Does this increase the confidence in the final paper?
- It is possible that EWG (and WG21 in general) ignores the process that led to P2900R8 and considers the resulting paper independently. It means that EWG claims it can read the paper and understand and judge its content regardless of the process that created it.

Further Investigation

We can investigate the data even more and bring new information to the table in the form of:

- Reflector load with correlation to subjects/polls. We believe, but didn't check yet, that there is such a correlation and high-volume discussion in the reflector exists for almost any topic. This high volume with the tiny preparation time described earlier may be interpreted as another evidence for the lack of processing time. But it could also be interpreted as vivid discussions that led to great results. To investigate these claims we'll also need to take a look at the participants of these massive discussions and conclude accordingly.
- Any other information the reader may think can help will be considered for further investigation.

Raw Data

This is the raw data, also available as a google spreadsheet [6].

Paper				**Telecon / F2F**		**Publish / Discussion Diff (days)**
Paper	Author	Publication Date	Subject	Date	Vote	
P3261R1	Joshua Berne	2024-10-10	constification	2024-10-10	Yes	0
P3261R0	Joshua Berne	2024-10-03	constification	2024-10-03	No	0
D2957R2	Andrzej Krzemieński	2024-09-26	coroutines	2024-09-26	Yes	0
P3210R1	Andrew Tomazos	2024-03-29	syntax	2024-09-05	Yes	160
P3290R1	Joshua Berne	2024-07-12	assertions	2024-09-05	No	55
P3290R0	Joshua Berne	2024-05-22	assertions	2024-06-27	No	36
D3097R1	Timur Doumler	2024-06-06	virtual functions	2024-06-27	Yes	21
P3250R0	Peter Bindels	2024-04-22	function pointers	2024-06-26	Yes	65
P3316R0	Jonas Persson	2024-05-22	semantics	2024-06-26	Yes	35
P3271R0	Lisa Lippincott	2024-06-20	function pointers	2024-06-26	Yes	6
P3328R0	Joshua Berne	2024-06-14	optimization	2024-06-26	Yes	12
P3290R0	Joshua Berne	2024-05-22	assertions	2024-06-20	No	29
P3311R0	Tom Honermann	2024-05-22	assertions	2024-06-20	No	29
D3097R1	Timur Doumler	2024-06-06	virtual functions	2024-06-13	Yes	7
P3265R2	Ville Voutilainen	2024-05-28	TS	2024-06-06	No	9
D3097R1	Timur Doumler,	2024-06-06	virtual functions	2024-06-06	No	0
P3165R0	Ville Voutilainen	2024-02-26	virtual functions	2024-06-06	No	101

P3169R0	Jonas Persson	2024-03-21	virtual functions	2024-06-06	No	77
P4000R0	DG	2024-05-22	TS	2024-05-30	Yes	8
P3265R2	Ville Voutilainen	2024-05-28	TS	2024-05-30	Yes	2
P3269R0	Timur Doumler	2024-05-21	TS	2024-05-30	Yes	9
P3276R0	Joshua Berne	2024-05-17	TS	2024-05-30	Yes	13
P3297R0	Ryan McDougall	2024-05-20	TS	2024-05-30	Yes	10
P3097R0	Timur Doumler	2024-04-12	virtual functions	2024-05-23	No	41
P3165R0	Ville Voutilainen	2024-02-26	virtual functions	2024-05-23	No	87
P3169R0	Jonas Persson	2024-03-21	virtual functions	2024-05-23	No	63
P3281R0	Jens Maurer	2024-04-26	constification	2024-05-16	Yes	20
P3281R0	John Spicer	2024-05-15	constification	2024-05-16	Yes	1
P3268R0	Peter Bindels	2024-05-07	constification	2024-05-16	Yes	9
D3270R0	John Lakos	2024-05-16	constification	2024-05-16	Yes	0
P3238R0	Ville Voutilainen	2024-04-15	semantics	2024-05-09	Yes	24
P3119R1	Joshua Berne	2024-05-09	general	2024-05-09	Yes	0
P3119R0	Joshua Berne	2024-04-03	general	2024-05-02	No	29
P3257R0	Jens Maurer	2024-04-26	constification	2024-05-02	No	6
D3238R0	Ville Voutilainen	2024-05-02	semantics	2024-05-02	No	0
D3228R1	Timur Doumler	2024-04-25	duplication	2024-04-25	No	0
P3119R0	Joshua Berne	2024-04-03	general	2024-04-25	No	22
P3221R0	Jonas Persson	2024-04-15	function pointers	2024-04-18	Yes	3
P3226R0	Timur Doumler	2024-04-12	syntax	2024-04-18	Yes	6
P3228R0	Timur Doumler	2024-04-16	duplication	2024-04-18	No	2
D3197R0	Timur Doumler	2024-04-11	general	2024-04-11	Yes	0
P3198R0	Andrzej Krzemieński	2024-03-29	general	2024-04-04	Yes	6

P3119R0	Joshua Berne	2024-04-03	general	2024-04-04	Yes	1
Tokyo EWG feedback	EWG	2024-03-20	safety	2024-03-22	Yes	2
D3198R0	Andrzej Krzemieński	2024-03-20	general	2024-03-21	Yes	1
P3191R0	Louis Dionne	2024-03-19	semantics	2024-03-21	Yes	2
D3172R0	Andrzej Krzemieński	2024-03-07	this pointer	2024-03-07	Yes	0
D2900R6	SG21	2024-02-29	corotinues	2024-02-29	Yes	0
P3167R0	Tom Honermann	2024-02-28	attributes	2024-02-29	Yes	1
D2900R6	SG21	2024-02-22	general	2024-02-22	No	0
P3088R1	Timur Doumler	2024-02-13	attributes	2024-02-15	Yes	2
P3073R0	Timur Doumler	2024-01-26	library	2024-02-08	Yes	13
P3102R0	Joshua Berne	2024-02-06	library	2024-02-08	Yes	2
P2932R3	Joshua Berne	2024-01-15	exceptions	2024-02-01	Yes	17
P2969R0	Timur Doumler	2023-12-04	exceptions	2024-02-01	Yes	59
P3113R0	Timur Doumler	2024-02-01	exceptions	2024-02-01	Yes	0
P3114R0	Andrzej Krzemieński	2024-02-01	exceptions	2024-02-01	Yes	0
P3066R0	Timur Doumler	2023-12-04	first/non-first declaration	2024-01-25	Yes	52
P2932R3	Joshua Berne	2024-01-15	first/non-first declaration	2024-01-25	Yes	10
P2894R2	Timur Doumler	2024-01-11	compile time	2024-01-11	No	0
P2932R2	Joshua Berne	2023-11-14	virtual functions	2024-01-11	No	58
P3066R0	Timur Doumler	2023-12-04	first/non-first declaration	2024-01-11	No	38
P2969R0	Timur Doumler	2023-12-04	exceptions	2024-01-11	Yes	38
					Total	63

Acknowledgment

Thanks to Ville Voutilainen for reading, commenting and discussing the data presented in this paper.

References

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