Document No:	WG21 N4565
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References:	ISO/IEC PDTS 19571
Reply To:	Barry Hedquist <beh@peren.com>
	INCITS/PL22.16 IR

Record of Response: National Body Comments

ISO/IEC PDTS 19571

Technical Specification: C++ Extensions for Concurrency

Attached is SC22/WG21 N4565, Record of Response to National Body Comments for ISO/IEC PDTS 19571, Technical Specification – C++ Extensions for Concurrency.

Document numbers referenced in the ballot comments are WG21 documents unless otherwise stated.

Template for comments and secretariat observations

Date:2015-08-11	Document: SC 22 N 5061	Project: ISO/IEC PDTS 19571

MB/ NC[1]	Line number	Clause/ Subclause	Paragraph/ Figure/Table	Type of comment[2]	Comments	Proposed change	Observations of the secretariat
JP1	2	2.3	10	ge	The first sentence of the note seems incorrect. It says "the validity of the `future` returned from `then` cannot be established" but the `future` returned from `then` should be always valid according to the postconditions. Is "`then`" in the sentence actually "continuation(func)"?	Note: In case of implicit unwrapping, the validity of the `future` returned from ~~`then`~~ `func` cannot be established until after the completion of the continuation.	ACCEPTED Thank you!
JP2	2	2.4	10	ge	The same comment as JP1 for `shared_future`.	Note: In case of implicit unwrapping, the validity of the `future` returned from ~~`then`~~ `func` cannot be established until after the completion of the continuation.	ACCEPTED WITH MODIFICATION The consensus was to remove the note from shared_future rather than copy.
JP3		2.7	2	te	The return type of `when_all` is fixed to `std::vector` in the current proposal. Generalizing it to arbitrary sequence container by passing it as a template parameter may provide more flexibility for the users (e.g., use of a custom allocator.)	template <class InputIterator, class Container = vector<typename iterator_traits<InputIterator>::value_type >> future<Container> when_all(InputIterator first, InputIterator last);	REJECTED This introduces additional complexity for which we have not yet found a use case, nor do we have implementation experience
JP4	2	2.7	5	te	The description should be changed to match the change proposed by JP3.	A new shared state containing a Sequence is created, where Sequence is either ~~vector~~ sequence container or tuple based on the overload, as specified above.	REJECTED (based on JP3)
JP5	5	2.7	5	te	The description should be changed to match the change proposed by JP3.	If the first overload is called with first == last, when_all returns a future with an empty ~~vector~~ sequence container that is immediately ready.	REJECTED (based on JP3)
JP6		2.9	2	te	The same comment as JP3 for `when_any` (to parametarize the return type sequence.)	template <class InputIterator, class Container = vector<typename iterator_traits<InputIterator>::value_type	REJECTED (based on JP3)

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						>> future<when_any_result<Container>> when_any(InputIterator first, InputIterator last);	
JP7	2	2.9	5	te	The description should be changed to match the change proposed by JP6.	A new shared state containing when_any_result<Sequence> is created, where Sequence is a ~~vector~~ sequence container for the first overload and a tuple for the second overload.	REJECTED (based on JP3)
JP8	2	2.9	5	ed	The expression in "a vector for the first overload and a tuple for the second overload" differs from "either vector or tuple based on the overload" in 2.7 paragraph 5. They should be uniformed because they say the same thing.	Not sure which is better in English. It's up to the editor.	ACCEPTED Modified the text to use the text "vector for the first overload and a tuple for the second overload" in 2.7/5.
JP9	6	2.9	5	te	The description should be changed to match the change proposed by JP6.	The futures field is an empty ~~vector~~ sequence container.	REJECTED (based on JP3)
GB 1	Page 15	3.4		Te	count_down(n) does not make sense when n > 1 It is stated that n ≥ counter, but a client does not know the value of the counter. Only is_ready() can tell whether count_down(n) is viable or not when n is > 1.	It would be reasonable to have a function, called get_counter(), that will return the current value of the counter. In addition, I suggest that count_down(n) should probably return min(counter,n). The return value is the actual value that is subtracted from the counter. Example: If the counter is 8 and one of the threads calls count_down(10), this call will return 8 and the value of the counter will become 0.	REJECTED However, it has been decided to add default argument n = 1 for count_down.
GB 2	Page 17	3.6	P10	Te	The semantics of arrive_and_drop are unclear. The concurrency TS gives the effects of arrive_and_drop as:	Add a sentence to make it clear under what circumstances the choice is made, and what it means to remove the thread from the set without "arriving" at the barrier.	ACCEPTED Reworked the wording in 3.6/13 to address the issue.

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					Either arrives at the barrier's synchronization point and then removes the current thread from the set of participating threads, or just removes the current thread from the set of participating threads. It is not clear how this choice is made, or what it means to "just remove the current thread from the set of participating threads". If that thread isn't considered to have "arrived", how are the waiting threads ever supposed to be released?		
GB 3	Page 18	3.9		Te	What is the meaning of "flex" in flex_barrier? It's unclear how the name of the class relates to its functionality.		REJECTED The name has already been discussed and no better names were forthcoming.

GB 4	Page 20	4.3		Te	atomic<T> has two overloads of each compare-exchange function for non-volatile values:
					
					bool compare_exchange_weak(T&,T,memory_order,memory_order);
					bool compare_exchange_weak(T&,T,memory_order);
					
					The concurrency TS makes that 4 for atomic_shared_ptr:
					
					bool compare_exchange_weak(shared_ptr<T>&,shared_ptr<T> const&,memory_order,memory_order);
					bool compare_exchange_weak(shared_ptr<T>&,shared_ptr<T>&&,memory_order,memory_order);
					bool compare_exchange_weak(shared_ptr<T>&,shared_ptr<T> const&,memory_order);
						Either:
						
						Change the signatures back to match atomic<T>, taking the new value by value rather than by reference.
						
						Document the expected characteristics of the different overloads.
							REJECTED
							This is by design per LWG review.
							However, additional clarification text was added to 4.1.

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					bool compare_exchange_weak(shared_ptr<T>&,shared_ptr<T>&&,memory_order); However, there is no description of the difference in semantics. Presumably, the difference is that in the overloads with rvalue references the operation can move from the rvalue. However, without a semantic description it is not clear at what point it can do that: should it only move on success, or may the implementation always move, even on failure? Is it *required* to move on success, or may it always copy anyway?		
GB 5	Page 20	4.3		Te	atomic<T> has volatile overloads for every member function. atomic_shared_ptr and atomic_weak_ptr are missing those overloads.	Add volatile overloads for every member function to atomic_shared_ptr and atomic_weak_ptr	REJECTED No consensus for change.
GB 6	Page 21	4.3		Te	The concurrency TS lists the assignment operator from a shared_ptr as atomic_shared_ptr& operator=(shared_ptr<T>) noexcept; The atomic template in C++11 has T operator=(T) noexcept; This is so that the returned value can be used without having to reload from the atomic. (A similar signature is also used for atomic_weak_ptr.)	Change the assignment operator to shared_ptr<T> operator=(shared_ptr<T>) noexcept;	ACCEPTED WITH MODIFICATIONS Changed return type of operator= return to void, based on subsequent discussion with GB.

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