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## Evolution Working Group Record of Discussion

### Monday: Procedural discussion.

#### Issue 1: There have been requests for some public record of our doings, issues, etc.

Koenig stated two concrete proposals:

- That EWG adopt Austern's XML structure for our EWG tracking list.
- That we appoint a volunteer to maintain the EWG tracking list.

Sutter suggested adopting the structure and format of LWG issues list. There was unanimous consent.

#### Issue 2: Splitting time between Ext and Lib.

Sutter suggested dealing with administrivia and organization in first session (Monday afternoon), and doing all the rest of the work in the joint Ext/Core sessions.

Abrahams said that he thought Core expected people to bring them some consensus.

Glassborow suggested a three-stage process: First, a small group should evaluate a paper on its merits. The would then bring forward report to lib+ext+core. Then there's a lot of fine detail work to do afterwards. Not good use of committee time.

Abrahams doesn't see how the issues list process maps onto extensions.

Koenig expressed concern about the danger of addressing individual issues in sequence without seeing the overall picture.

Sutter said that for this meeting we'll get a small group working on outlining our process, and everybody else breaking up into small groups evaluating proposals that we'll then present to the full group (EWG + LWG) on Tuesday and Wednesday.

Small-group volunteers:

- Process outline: Sutter, Tana Plauger, Seymour.
- N1363=02-0021 C++ Support for Delegation (Lois Goldthwaite): Goldthwaite, Glassborow, Abrahams.

- N1363. Glassborow wants to delay until after Koenig's talk on Tuesday evening.
- N1377=02-0035 A Proposal to Add Move Semantics Support to the C++ Language (H. Hinnant, P. Dimov, D. Abrahams) and N1385=02-0043 The Forwarding Problem: Arguments (Peter Dimov, Howard Hinnant, Dave Abrahams): Delayed for tomorrow in full committee, as time has already been set aside for interested CWG members to attend.
- N1381=02-0039 Proposal to Add Static Assertions to the Core Language (R. Klarer, J. Maddock): Dos Reis, Klarer, Ward.
- N1382=02-0040 Proposal for adding tuple type into the standard library (Jaakko Järvi): Powell, Marcus, Abrahams, Järvi.
- N1384=02-0042 PME: Properties, methods and events (John Wiegley): Naroff, Koenig, Abrahams, Wiegley.
- N1388=02-0046 Enhancing numerical support (Gabriel Dos Reis): Dos Reis, Seymour, Klarer, Abrahams.
- N1394=02-0052 Some proposed extensions to C++ language (David Miller), "shared" keyword for multithreading, radix representations, and finally: Eli Boling, Dos Reis, Glassborow (who says that UK delegation has already looked at it).
- Abrahams' library customization notes on proposed extensions to address LWG issues 225, 226, 229: Järvi, Marcus.
- Jan Kristoffersen's notes on Introduction to standardization of atomic operations: Eli Boling, Kristoffersen, Glassborow, Dos Reis.
- Many people want to be included in the discussion of N1373=02-0031 Proposed Addition to C++: Typedef Templates (Herb Sutter) and Koenig's presenting of Stroustrup's paper on auto/typedef. These will be considered by the full EWG on Monday and Wednesday afternoon.

In the afternoon, EWG worked in small groups. From 3:30-5 pm we plan to discuss auto/typeof and typedef templates, and at 5:30 we'll summarize the day's work and status of proposals, and which small groups want to bring their proposals to the full EWG + LWG.

The auto/typeof discussion ran until nearly 5pm, so EWG later considered the typedef templates proposal on Wednesday afternoon.

## **Tuesday and Wednesday**

On Tuesday (all day) and Wednesday morning, EWG met combined with LWG to consider the LWG and EWG extension proposals.

On Wednesday afternoon, the EWG considered the typedef templates proposal.

## **Thursday: Meeting with CWG**

On Thursday after lunch, EWG met together with CWG to consider the "NAD – Future" issues on the Core list.

### **CWG extension issues EWG will pick up.**

The EWG will take over the following CWG issues and put them on the EWG tracking list:

- 6: RVO-like treatment of by-value arguments to inline functions
- A set of issues related to separating linkage from calling convention:
  - 13: extern "C" for Parameters of Function Templates. Dave Abrahams raised the related issue that he would like to be able to create function templates, or static functions of class templates, that when instantiated have 'extern "C"' calling convention (if not linkage).
  - 107: Linkage of operator functions extern "C" for calling convention
  - 168: C linkage for static member functions
- 150: Template template parameters and default arguments
- 220: All deallocation functions should be required not to throw
- 256: Overflow in size calculations
- An issue about whether exception specifications be part of the type or not:
  - 294: Can static\_cast drop exception specifications?

Other potential extension-related ideas that arose incidentally in one or more CWG issues and that EWG will pick up:

- Having an enum that's a full scope where the enumerated names are not injected into the enclosing scope.
- "friend class T;" where T is a template parameter (e.g., what if T is int?).
- Treating default arguments as a set of overloaded functions (Maurer).

CWG also reopened the following issues, which will remain on the CWG issues list (not EWG):

- 114: Virtual overriding by template member function specializations. David Miller wanted to allow it. Andy Koenig wanted to make it ill-formed, diagnostic required. John Spicer noted that making it ill-formed could break existing code. Dos Reis said that if we did it we should also for consistency make a template constructor match a copy constructor (ditto assignment) – this was followed by loud yells that Dos Reis's argument is a great reason not to do it.

EWG was unable to schedule time with LWG to do the same review with the LWG "NAD – Future issues" – this should be done in Oxford if LWG has not already reviewed their closed issues for Library TR extensions material.

EWG adjourned for the remainder of the meeting.