Boost

A small introduction

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What is Boost?

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- Library extending C++ for a wide range of applications

- Founded of members of C++ standard committee

- Around 50 active developers

- Over 80 individual libraries

What is special about Boost?

1. Close connection to C++ standard commitee
   - ➢ „test environment" for future C++ Standard
   - ➢ Many of the new C++ libraries originate in Boost

2. Code contribution concept (public reviewing process)
   1. Submit code to Boost
   2. Review Manager initially checks submission
   3. Discussion on mailing-list

      – Quality of design and implementation?
      – Portability to different compilers/operating systems?
      – Library useful for specified target group?
      – Documentation complete, precise and clear?

   4. Review Manager decides acceptance

Key features

- String and text processing
- Mathematical and numerical libraries
- Container
- Data structures
- Generic Programming (e.g. Traits)
- and many, many more

- Join algorithm from *boost/algorithm/string/join.hpp*

```cpp
#include <boost/algorithm/string/join.hpp>
#include <vector>
#include <iostream>
int main(int, char **)
{
    std::vector<std::string> list;
    list.push_back("Hello");
    list.push_back("World!");
    std::string joined = boost::algorithm::join(list, ", ");
    std::cout << joined << std::endl;
}
Output:
Hello, World
```

- Regular expressions from *boost/regex.hpp*

```cpp
#include <boost/regex.hpp>
#include <string>
#include <iostream>
int main(int, char **)
{
    const boost::regex e("bob");
    std::string s1("hello bob");
    std::cout << regex_replace(s1, e, "sally") << "\n";
}
Output:
hello sally
```

Boost in MITK

- Graph processing (Vessel, XDLFL, …)
- Mathematics (Diffusion imaging, Shape Models, …)
- Image processing (Graph cut, …)

Other useful Boost functions
- Date & Time
- Regular expressions
- File system operations (search, …)

Boost…

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> „… one of the most highly regarded and expertly designed C++ library projects in the world."
>
> Herb Sutter and Andrei Alexandrescu, C++ Coding Standards

References

http://www.boost.org/

Effective C++, Item 55: „Familiarize yourself with boost"