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Re: Working Draft, Extensions to C ++ for Modules, n4647

# Exporting Using Directives

Nathan Sidwell

This discusses how exported using directives affect name lookup.

## 1 Background

The Modules proposal is not entirely clear what the semantics of exported using directives are. Using directives are applicable in both qualified and unqualified name lookup. Their exact behaviour is slightly different in the two cases. That difference should be unaffected by the resolution of this question, which itself should not be dependent on whether the lookup is qualified or not.

## 2 Example

Consider:

```
// Foo interface TU
export module Foo;
namespace bill {
    export void X (int); // #1
};
namespace bob {
    export using namespace bill;
}

// Bar interface TU
export module Bar;
namespace bill {
    export void X (); // #2
}

// User TU
import Foo;
```

```
import Bar;
... bob::X ... // What partitions are searched?
```

## 3 Discussion

The question being asked is whether an exported using directive makes namespace partitions in other modules visible or not.

If the exported using directive only made `Foo`'s partition of `bill` visible, then the declaration #1 would be the result of qualified lookup. If exporting a using directive applies to all partitions of the nominated namespace, then both #1 and #2 would appear in the name lookup.

### 3.1 Non-Exported Using Directive

A simpler starting point is to consider a non-exported using directive. Such a directive is clearly only intended to be active when the lookup context is the module containing that using directive. The desired behaviour is that such a using directive will add all partitions of the nominated namespace to the search.

### 3.2 Exported Using Directive

It would seem that, if the exported using directive applied to all partitions of the nominated namespace, the two search algorithms would be unaffected, once visibility of the using directive itself had been determined.

If, instead, the using directive only applied to the exporting module's partition, we then have the awkward question of whether searches of other modules' partitions of that namespace also terminate, or follow their own using directives. I suspect this quickly becomes too complex for users to understand.

## 4 Conclusion

The modules proposal should clarify that the intended meaning is for an exported using directive to make visible all partitions of the nominated namespace.