

# Temporal Filters

<b>Motivation:</b>	<i>Temporal filter support based on FES 2.0 spec</i>
<b>Contact:</b>	Justin Deoliveira
<b>Tracker:</b>	<a href="http://jira.codehaus.org/browse/GEOT-2367">http://jira.codehaus.org/browse/GEOT-2367</a>
<b>Tagline:</b>	Temporal filter support based on FES 2.0 spec

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## Description

The new version of the filter encoding specification (FES 2.0) adds 14 filter operators for temporal filters. Operations take a mix of two types of operands:

1. A single instance in time (TM\_Instant)
2. A time range or period (TM\_Period)

The following table outlines the semantics of the new operators:

Operation	t1,t2	t1[],t2	t1,t2[]	t1[],t2[]
After	t1 > t2	t1.start > t2	t1 > t2.end	t1.start > t2.end
Before	t1 < t2	t1.end < t2	t1 < t2.start	t1.end < t2.start
Begins			t1 = t2.start	t1.start = t2.start and t1.end < t2.end
BegunBy		t1.start = t2		t1.start = t2.start and t1.end > t2.end
TContains		t1.start < t2 < t1.end		t1.start < t2.start and t2.end < t1.end
During			t2.start < t1 < t2.end	t1.start > t2.start and t1.end < t2.end
EndedBy		t1.end = t2		t1.start < t2.start and t1.end = t2.end
Ends			t1 = t2.end	t1.start > t2.start and t1.end = t2.end
TEquals	t1 = t2			t1.start = t2.start and t1.end = t2.end
Meets				t1.end = t2.start
MetBy				t1.start = t2.end
TOverlaps				t1.start < t2.start and t1.end > t2.start and t1.end < t2.end
OverlappedBy				t1.start > t2.start and t1.start < t2.end and t1.end > t2.end
AnyInteracts				

The `gt-temporal` module contains classes that implement many of the parts of .... They are used as the basis of implementing above operators.

## Status

This proposal is completed.

- [Andrea Aime](#) +1

- Ben Caradoc-Davies +0
- Christian Mueller +1
- Ian Turton +0
- Justin Deoliveira +1
- Jody Garnett +1
- Simone Giannecchini +0

## Tasks

no progress		done		impeded		lack mandate/funds/time		volunteer needed
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1. Roll `gt-temporal` into `gt-main`
2. Add temporal filter interfaces to `gt-opengis`
3. Implement filter interfaces in `gt-main`
4. Update `FilterVisitor` implementations
5. Update wiki module matrix
6. Add to the [upgrade](#) to 8.0 instructions
7. `jpg`: Update the user guide sphinx docs and java examples

### Roll `gt-temporal` into `gt-main`

Currently the `gt-temporal` module sits standalone and is not used by any existing module. To prevent the proliferation of another core module the classes from `gt-temporal` will be rolled into `gt-main`.

### Add temporal filter interfaces to `gt-opengis`

The existing filter model interfaces are defined in `gt-opengis`. Following suite the new filter interfaces will be defined alongside. This involves the core set of interfaces and updates to `FilterFactory`, `FilterVisitor`, and `FilterCapabilities`.

### Implement filter interfaces in `gt-main`

To compliment the new interfaces. The filter operations will utilize `gt-temporal` classes... most notably `TemporalOrder.relativePosition()` which is used to compute the relationships described above between two temporal objects.

### Update `FilterVisitor` implementations

There are a number of filter visitor implementations that require update with the new methods. In some cases where temporal constructs are not supported directly or do not apply to the visitor the new methods will simply throw `UnsupportedOperationException`.

## API Changes

### FilterVisitor

BEFORE:

```
FilterVisitor {
    ...
}
```

AFTER:

```
FilterVisitor {  
    visit(After)  
    visit(Before)  
    ...  
}
```

The only breaking change will be the `FilterVisitor` implementations. All other api changes are additions.

## Documentation Changes

- Add to the [upgrade](#) to 8.0 instructions
- [gt-opengis filter api](#) update with a section for temporal filters
- [gt-main filter examples](#) update with temporal examples
- [gt-main](#) will need a new page for the utility classes from `gt-temporal`