

## BornAgain - Refactoring #1527

Feature # 1290 (Rejected): === Core: framework ===

### simplify containsMagneticMaterial, printSampleTree, genPyScript

22 Jul 2016 09:44 - wuttke

<b>Status:</b>	Archived	<b>Start date:</b>	22 Jul 2016
<b>Priority:</b>	Normal	<b>Due date:</b>	
<b>Assignee:</b>	wuttke	<b>% Done:</b>	0%
<b>Category:</b>		<b>Estimated time:</b>	0.00 hour
<b>Target version:</b>	Sprint32		

#### Description

Try a lighter way to iterate through the children of a Sample. The current implementation of ISample::containsMagneticMaterial() involves all the following:

```
// ISample.cpp:
bool ISample::containsMagneticMaterial() const
{
    SampleMaterialVisitor material_vis;
    VisitSampleTreePreorder(*this, material_vis);
    return material_vis.containsMagneticMaterial();
}

// ISampleVisitor.cpp:
void VisitSampleTreePreorder(const ISample& sample, ISampleVisitor& visitor)
{
    SampleTreeIterator<SampleIteratorPreorderStrategy> it(&sample);
    it.first();
    while (!it.isDone()) {
        visitor.setLevel(it.getLevel());
        const ISample *child = it.getCurrent();
        child->accept(&visitor);
        it.next();
    }
}

// SampleTreeIterator.h:
class IteratorMemento
{
public:
    IteratorMemento() {}
    virtual ~IteratorMemento() {}

    void push_state(const IteratorState& state) { m_state_stack.push(state); }
    void pop_state() { m_state_stack.pop(); }
    IteratorState& get_state() { return m_state_stack.top(); }
    bool empty() const { return m_state_stack.empty(); }
    void reset() { while(!m_state_stack.empty()) m_state_stack.pop(); }
    const ISample* getCurrent() { return m_state_stack.top().getCurrent(); }
    void next() { m_state_stack.top().next(); }
    size_t size() const { return m_state_stack.size(); }
protected:
    std::stack<IteratorState > m_state_stack;
};

template <class Strategy>
class BA_CORE_API_SampleTreeIterator
{
...
}

// ISampleIteratorStrategy.h:
```

```

class BA_CORE_API_SampleIteratorPreorderStrategy : public ISampleIteratorStrategy
{
public:
    SampleIteratorPreorderStrategy();

    virtual SampleIteratorPreorderStrategy* clone() const;

    virtual ~SampleIteratorPreorderStrategy();
    virtual IteratorMemento first(const ISample* p_root);
    virtual void next(IteratorMemento &iterator_stack) const;
    virtual bool isDone(IteratorMemento &iterator_stack) const;
};

// ISampleIteratorStrategy.cpp:
IteratorMemento SampleIteratorPreorderStrategy::first(const ISample *p_root)
{
    IteratorMemento iterator_stack;
    iterator_stack.push_state( IteratorState(p_root) );
    return iterator_stack;
}

void SampleIteratorPreorderStrategy::next(IteratorMemento &iterator_stack) const
{
    const ISample *p_sample = iterator_stack.getCurrent();
    if ( !p_sample ) {
        throw Exceptions::NullPointerException("CompositelIteratorPreorderStrategy::next(): "
            "Error! Null object in the tree of objects");
    }
    std::vector<const ISample *> children = p_sample->getChildren();
    if (children.size()>0) {
        iterator_stack.push_state( IteratorState(children) );
        return;
    }
    iterator_stack.next();
    while ( !iterator_stack.empty() && iterator_stack.get_state().isEnd() )
    {
        iterator_stack.pop_state();
        if ( !iterator_stack.empty() ) iterator_stack.next();
    }
}

bool SampleIteratorPreorderStrategy::isDone(IteratorMemento &iterator_stack) const
{
    return iterator_stack.empty();
}

// plus lots of boilerplate code in ISampleVisitor.h/cpp:
void SampleMaterialVisitor::visit(const ParticleDistribution*) {}
void SampleMaterialVisitor::visit(const ParticleComposition*) {}
void SampleMaterialVisitor::visit(const MesoCrystal*) {}
void SampleMaterialVisitor::visit(const ParticleCoreShell*) {}
void SampleMaterialVisitor::visit(const IFormFactor*) {}
void SampleMaterialVisitor::visit(const FormFactorDWBAPol*) {}
void SampleMaterialVisitor::visit(const FormFactorWeighted*) {}
.....

```

## History

### #1 - 22 Jul 2016 16:31 - wuttke

For containsMagneticMaterial, reimplementaion went smoothly in no more than 20 lines, cff2abd.

### #2 - 25 Jul 2016 18:43 - wuttke

- Status changed from Sprint to Resolved

Resolved in 9e708f4af; ISampleVisitor no longer needed in Core.

**#3 - 11 Nov 2016 14:48 - herck**

- *Status changed from Resolved to Archived*