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New Geometry Concept

Platform project
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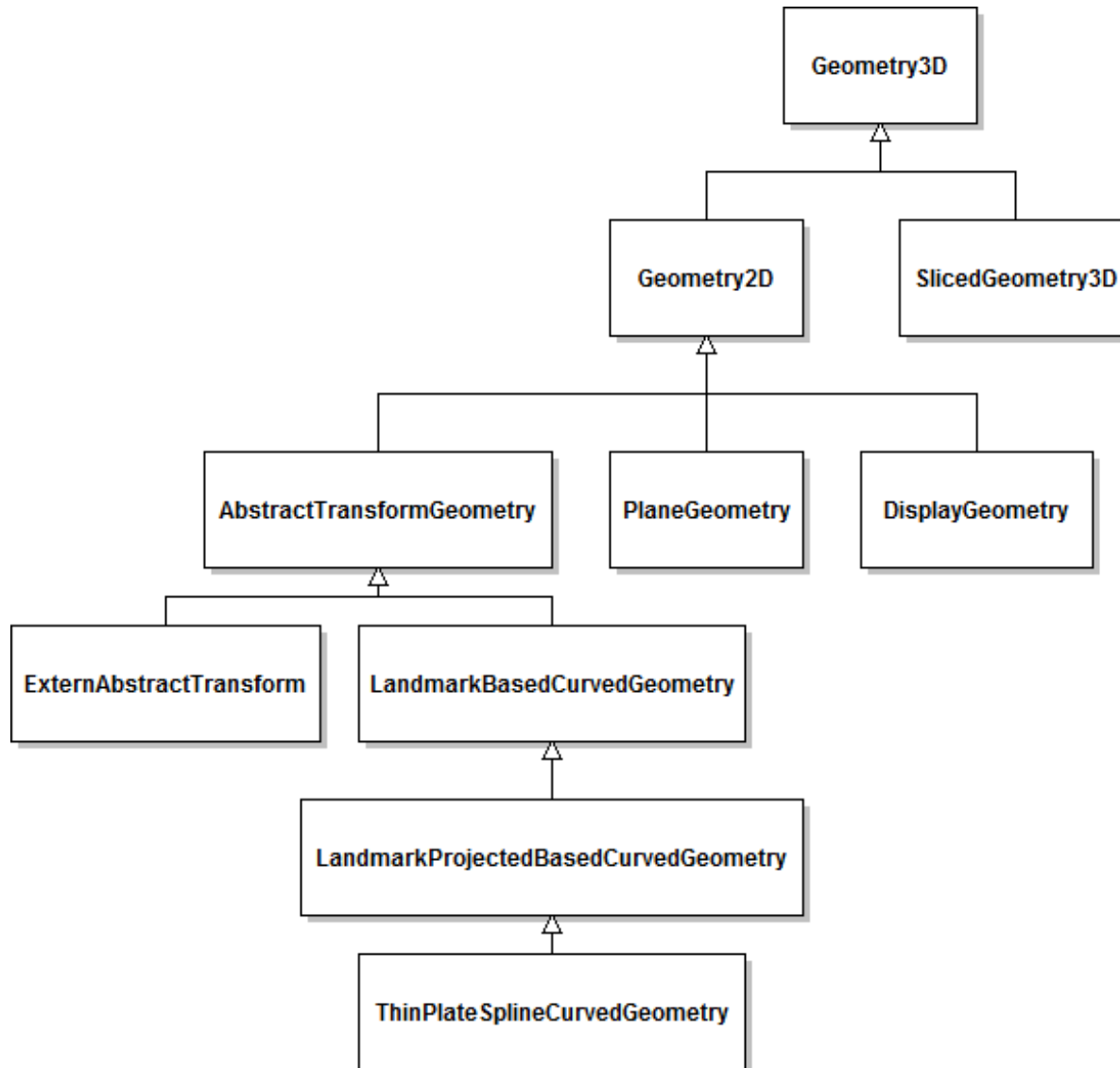
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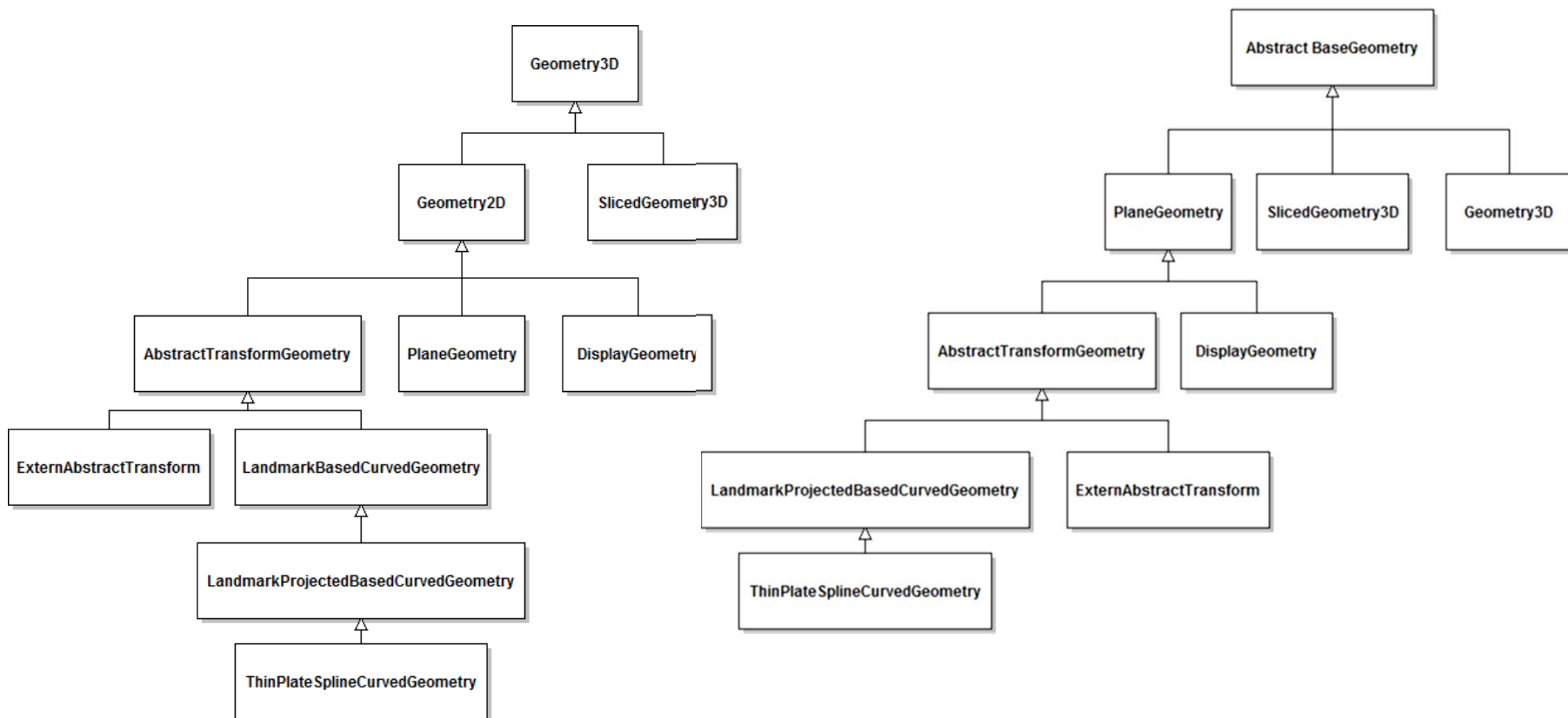
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The old concept



The new geometry concept

- Abstract BaseGeometry
- No Geometry2D
- No LandmarkBasedCurvedGeometry



Other changes

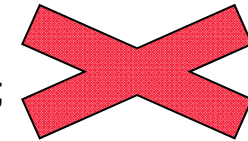
- Variables are private
- No “parametric” functions in BaseGeometry
- No float spacing any more
- TimeGeometry separated from BaseGeometry

How to adapt your code

- Rename Geometry2D... to PlaneGeometry...
- Use Set / Get methods instead of private variables
- No “parametric” functions: use standard functions
- No float spacing: use spacing

- Set TimeBounds in TimeGeometry object

```
this -> GetSlicedGeometry() -> SetTimeBounds(  
    input -> GetSlicedGeometry() -> GetTimeBounds());
```



```
ProportionalTimeGeometry::Pointer timeGeometry = ProportionalTimeGeometry::New();
```

```
timeGeometry -> Initialize(this -> GetSlicedGeometry(),  
    this -> GetTimeGeometry() -> CountTimeSteps());
```

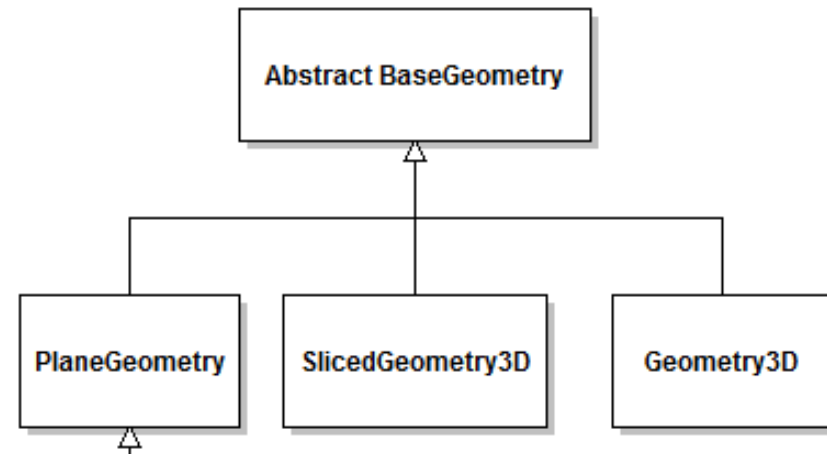
```
timeGeometry -> SetFirstTimePoint(this -> GetTimeGeometry() -> GetMinimumTimePoint());
```

```
TimePointType stepDuration = input -> GetTimeGeometry() -> GetMaximumTimePoint(0)  
    - input -> GetTimeGeometry() -> GetMinimumTimePoint(0);
```

```
timeGeometry -> SetStepDuration(stepDuration);
```

```
this -> SetTimeGeometry(timeGeometry);
```

- Geometry3D cannot be replaced
 - Use e.g. PlaneGeometry
 - Use BaseGeometry
 - typecast



```
mitk::Geometry3D::Pointer m_geometry = Geometry3D::New();
```

```
mitk::BaseGeometry::Pointer m_geometry =  
    dynamic_cast<BaseGeometry*>(geo3D.GetPointer());
```

- Migration guide

MITK 2014.03.99-923764a5
Medical Imaging Interaction Toolkit

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Deprecated List
MITK API Documentation
BlueBerry Application Framework

Migration Guide to new Geometry Concept

General Changes

Old class diagram

Until now, all geometry classes inherited from Geometry3D. This inheritance didn't make sense. For example, there is no reason, why we need a Geometry2D and a PlaneGeometry as both describe the same thing. Also, why does a two-dimensional class need to inherit from a three-dimensional class?

```
graph TD
    Geometry3D --> Geometry2D
    Geometry3D --> SlicedGeometry3D
    Geometry2D --> AbstractTransformGeometry
    Geometry2D --> PlaneGeometry
    Geometry2D --> DisplayGeometry
    AbstractTransformGeometry --> ExternAbstractTransform
    AbstractTransformGeometry --> LandmarkBasedCurvedGeometry
    LandmarkBasedCurvedGeometry --> LandmarkProjectedBasedCurvedGeometry
    LandmarkProjectedBasedCurvedGeometry --> ThinPlateSplineCurvedGeometry
```

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- Old class diagram
- New class diagram
- How to adapt your code
- Variables are private.
- Always use PlaneGeometry instead of Geometry2D...
- Rename Geometry2D... classes.
- In some cases, use BaseGeometry instead of Geometry3D.
- Clones of BaseGeometry.
- Create an object of BaseGeometry.
- Virtual functions.
- Parametric functions are not part of BaseGeometry.
- There is no float spacing any more.
- Always use LandmarkProjectorBasedCurvedGeometry instead of LandmarkBasedCurvedGeometry.
- Time Geometry and Time bounds are not part of the Geometry classes any more.

Medical Imaging Interaction Toolkit - Documentation Portal | MITK: Developer Manual | MITK Guides | Generated on Thu May 15 2014 11:33:45 for MITK by doxygen 1.8.0