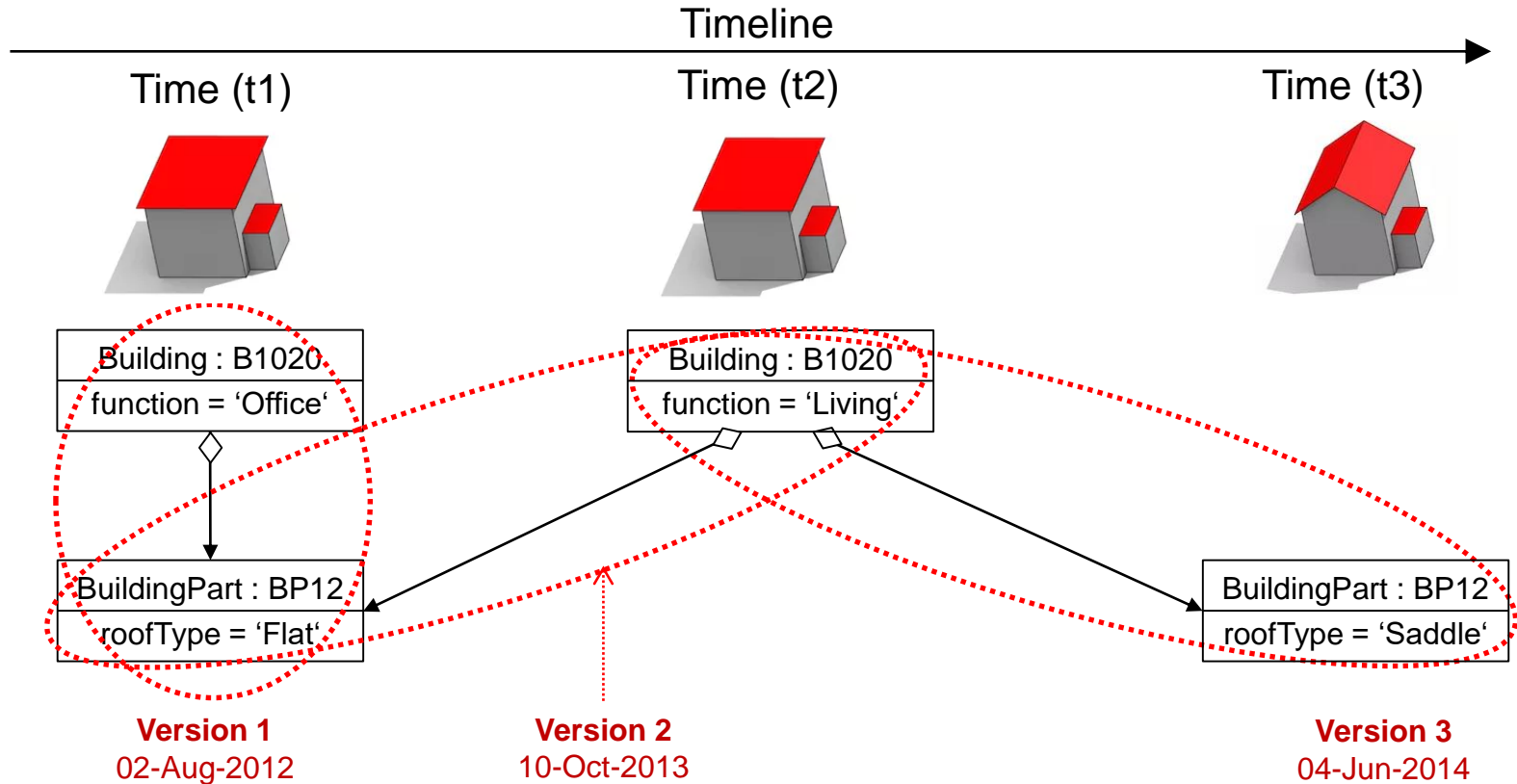


CityGML 3.0 – Version management using XLinks

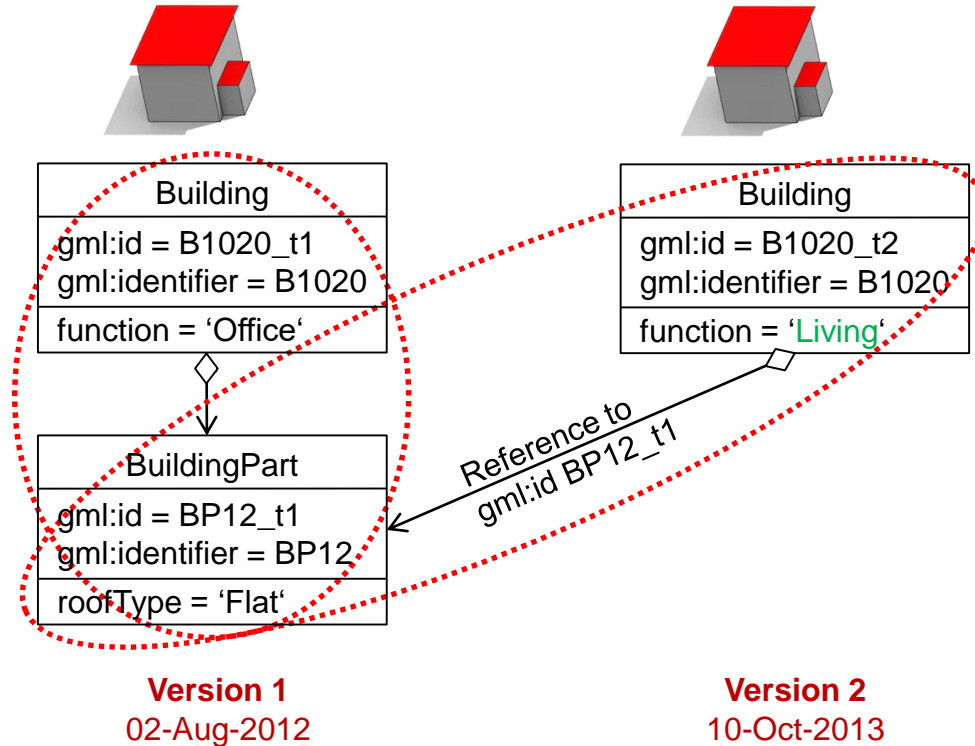
Example scenario



Version management in CityGML 3.0 using XLinks

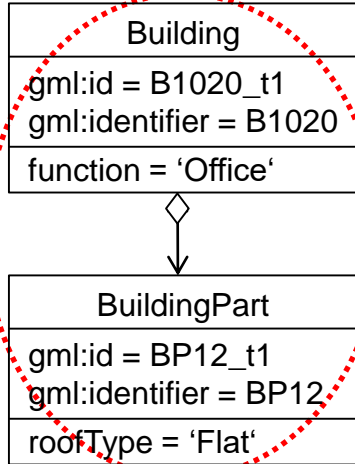
- This solution makes use of the “gml:id” attribute to reference versioned features
 - In addition, three rules are introduced which define how to deal with cases when
 - 1) only the top-level feature changes
 - 2) only a subordinate feature changes
 - 3) top-level and subordinate features change
- The rules are exemplified on the following slides

Rule 1: Toplevel feature changes

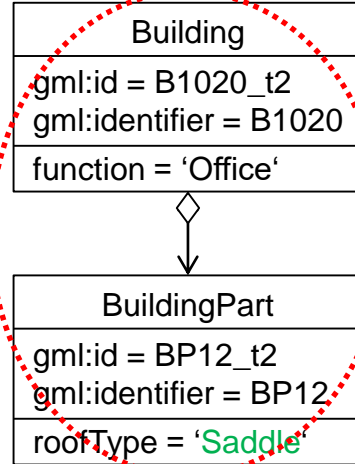


- When only the toplevel feature changes (here: Building), a new version of the toplevel feature is created.
- All subordinate features, i.e. the features that are part of the toplevel feature (here: BuildingPart), remain unchanged and are referenced in their unchanged version by the new version of the toplevel feature via their gml:id.

Rule 2: Subordinate feature changes



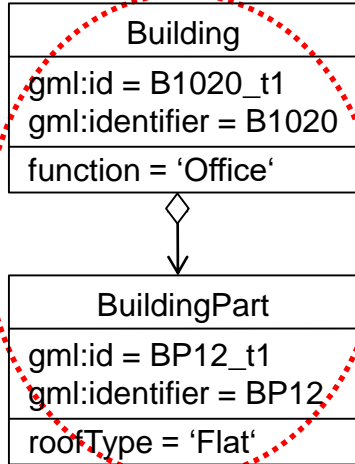
Version 1
02-Aug-2012



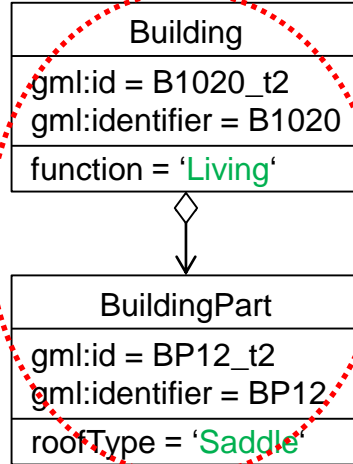
Version 2
10-Oct-2013

- When only a subordinate feature changes (here: BuildingPart), a new version of this feature and a new version of the toplevel feature (here: Building) are created.
- The new version of the toplevel feature contains the new version of the subordinate feature.
- All other subordinate features that do not change are referenced in their unchanged versions by the new version of the toplevel feature as is shown in Case 1.

Rule 3: Toplevel and subordinate features change



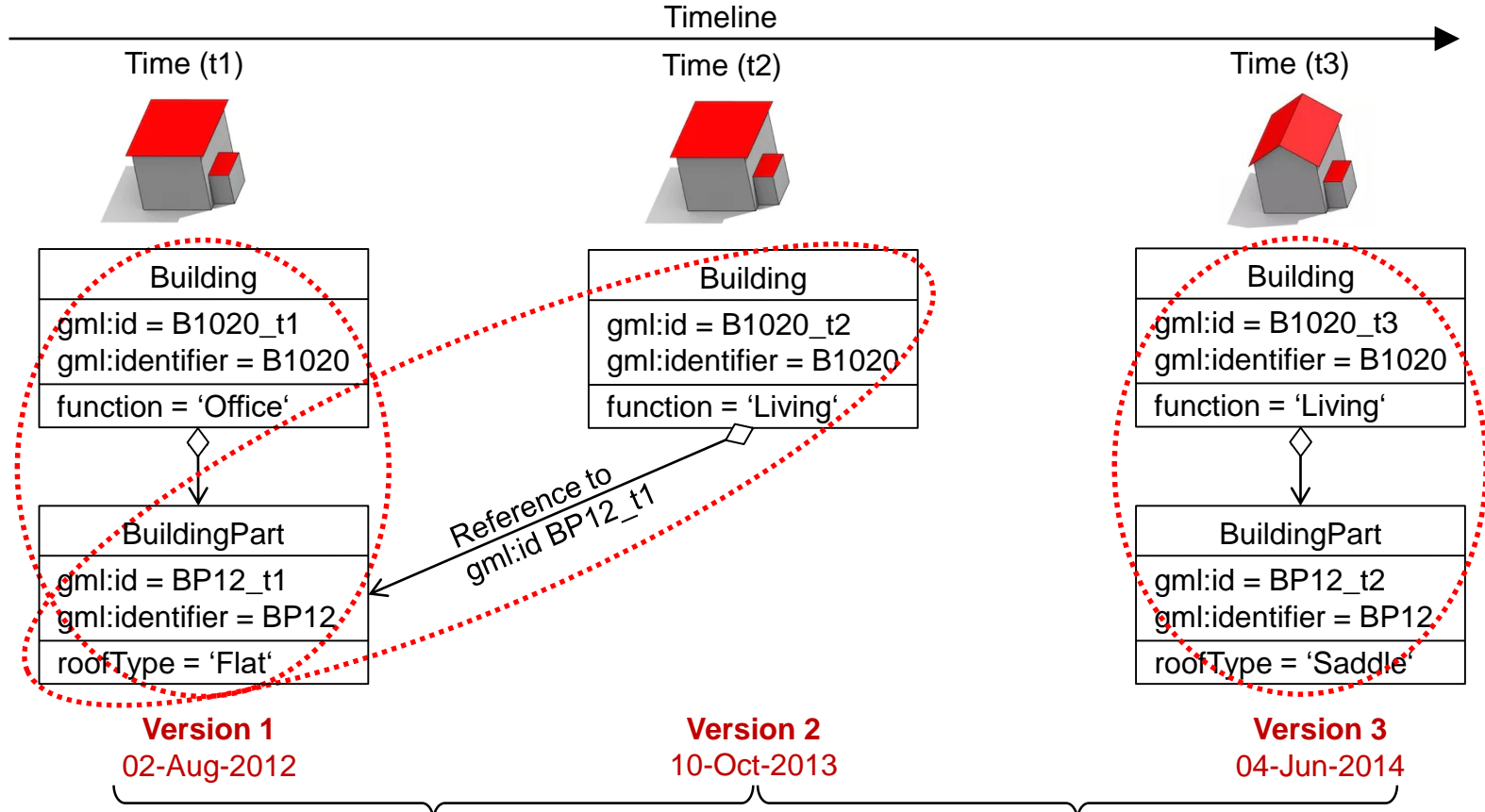
Version 1
02-Aug-2012



Version 2
10-Oct-2013

- When the toplevel feature and a subordinate feature change, a new version of the toplevel and the subordinate feature are created.
- The new version of the toplevel feature contains the new version of the subordinate feature.
- All other subordinate features that do not change are referenced in their unchanged versions by the new version of the toplevel feature as is shown in Case 1.

Example scenario combining rules 1 and 2



Representation of the example scenario in CityGML 3.0 combining rules 1 and 2

Rule 1: Toplevel feature changes

Rule 2: Subordinate feature changes

```
<core:CityModel xmlns:gml="http://www.opengis.net/gml/3.2" xmlns:bldg="http://www.opengis.net/infrastructure/gml/bldg">
  <core:cityObjectMember>
    <bldg:Building gml:id="B1020_t1">
      <gml:identifier codeSpace="www.test.org/xyz">B1020</gml:identifier>
      <core:creationDate>2012-08-02T00:00:00</core:creationDate>
      <core:terminationDate>2013-10-09T00:00:00</core:terminationDate>
      <bldg:function>Office</bldg:function>
      <bldg:buildingPart>
        <bldg:BuildingPart gml:id="BP12_t1">
          <gml:identifier codeSpace="www.test.org/xyz">BP12</gml:identifier>
          <core:creationDate>2012-08-02T00:00:00</core:creationDate>
          <core:terminationDate>2014-06-03T00:00:00</core:terminationDate>
          <bldg:roofType>Flat</bldg:roofType>
        </bldg:BuildingPart>
      </bldg:buildingPart>
    </bldg:Building>
  </core:cityObjectMember>
  <core:cityObjectMember>
    <bldg:Building gml:id="B1020_t2">
      <gml:identifier codeSpace="www.test.org/xyz">B1020</gml:identifier>
      <core:creationDate>2013-10-09T00:00:00</core:creationDate>
      <bldg:function>Living</bldg:function>
      <bldg:buildingPart xlink:href="#BP12_t1"/>
    </bldg:Building>
  </core:cityObjectMember>
  <core:cityObjectMember>
    <bldg:Building gml:id="B1020_t3">
      <gml:identifier codeSpace="www.test.org/xyz">B1020</gml:identifier>
      <core:creationDate>2014-06-03T00:00:00</core:creationDate>
      <bldg:function>Living</bldg:function>
      <bldg:buildingPart>
        <bldg:BuildingPart gml:id="BP12_t3">
          <gml:identifier codeSpace="www.test.org/xyz">BP12</gml:identifier>
          <core:creationDate>2014-06-03T00:00:00</core:creationDate>
          <bldg:roofType>Saddle</bldg:roofType>
        </bldg:BuildingPart>
      </bldg:buildingPart>
    </bldg:Building>
  </core:cityObjectMember>
</core:CityModel>
```