Controlling the unified portrayal of geospatial cross-border maps

W3C workshop on Access Control Application Scenarios

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Motivation Use Case

- Disaster management cross border
- Challenge: Different styling of maps
- Solution: Unified portrayal of maps
Geo-specific Access Rights

- Two rescue centers (German, Dutch)
- Each rescue center can request maps using national portrayal
  - for own nation, and
  - for other nation only if “Cross-Border-Map”
- Access needs to be controlled based on
  - Nationality of the center (Dutch or German)
  - Mapping area
  - Portrayal parameters (styling)
What is a “Cross-Border-Map”? 

I am a Cross-Border-Map 

I am NOT a Cross-Border-Map 

I am NOT a Cross-Border-Map
What is a “Cross-Border-Map”? 

Am I a Cross-Border-Map?
## Cross-Border Restrictions

<table>
<thead>
<tr>
<th>Scenario*</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>#1</td>
<td>A German user can apply German styling to German features</td>
</tr>
<tr>
<td>#2</td>
<td>A Dutch user can apply Dutch styling to Dutch features</td>
</tr>
<tr>
<td>#3</td>
<td>A German user cannot access Dutch features only (no cross-border operation!)</td>
</tr>
<tr>
<td>#4</td>
<td>A Dutch user cannot access German features only (no cross-border operation!)</td>
</tr>
<tr>
<td>#7</td>
<td>A German user can apply German styling to German AND Dutch features (cross-border operation)</td>
</tr>
<tr>
<td>#8</td>
<td>A Dutch user can apply Dutch styling to German AND Dutch features (cross-border operation)</td>
</tr>
</tbody>
</table>

*: Scenarios #5 and #6 are omitted for readability
GeoXACML 1.0

- Geo-specific extension of XACML 2.0
  - data type Geometry
  - geo-specific functions
  - GML2 and GML3 geometry encoding

- Geo-specific functions
  - Testing topological relations, e.g. *Within*
  - Geometric functions, e.g. *Buffer, Boundary, Intersection, Distance*
Access Rights in GeoXACML

<Condition>
  <Apply FunctionId="urn:ogc:def:function:geoxacml:1.0:geometry-crosses">
    <Apply FunctionId="urn:ogc:def:function:geoxacml:1.0:geometry-one-and-only">
      <AttributeSelector
        DataType="urn:ogc:def:dataType:geoxacml:1.0:geometry"
        RequestContextPath="/xacml-context:Request/xacml-context:Resource/xacml-context:ResourceContent/ogc:GetMap/ogc:BoundingBox"/>
    </Apply>
  </Apply>
  <VariableReference VariableId="gBorder"/>
</Condition>
Policy Geometries
Cross-Border Rights
Discussion

- Additional use case
  - Access controlled based on user location

- Limitation
  - Geometry types *Null* and *Circle* are not supported in GeoXACML 1.0

- Applicability of GeoXACML
  - All use cases where rights are based on geometry
Thank You for your Attention!

„The important thing is to never stop questioning…“ [Albert Einstein]

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