

The ADL Gazetteer Protocol

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Outline

- Goals
- Abstract gazetteer model
- Services
- Query language
- Examples



Goals

- Lightweight protocol
 - accommodate differing implementations
 - simple services that can be combined into higher-level services
 - find “San Diego, CA” –**NO**
 - find the state *S* named “California” +
find a city named “San Diego” within *S* –**YES**
- Streamlined for gazetteers
- Capture the essence of
 - what a gazetteer is
 - what gazetteer services are



Abstract gazetteer model (1)

- Gazetteer = set of gazetteer entries
- Gazetteer entry
 - describes a single place
 - one entry per place
- Inter-entry relationships
 - Sacramento is the “capital of” California



Gazetteer entry

- Identifier
- Attributes
 - 1+ names
 - unqualified, e.g., “San Diego”
 - 1+ footprints
 - region defined in WGS84 coordinates
 - not necessarily contiguous
 - 0+ classes
 - term drawn from vocabulary or thesaurus
 - city, park, mountain, lake, etc.
- Attribute qualifiers
 - primary
 - historical



Sidebar: relationships

- The thesaurus approach
 - idea: treat a gazetteer as a kind of thesaurus
 - **use BT/NT, RT to describe gazetteer relationships**
 - but... what is a RT for “San Diego”?
 - but... how to map rigid BT/NT relationships to the real-world messiness of overlapping places?
 - but...
 - but...
- Conclusion
 - thesaurus model is a poor fit
 - thesaurus services are a poor fit



Abstract gazetteer model (2)

- Gazetteer = set of gazetteer entries
- Gazetteer entry ≡ single place
 - identifier, names, footprints, classes
- Inter-entry relationships
 - explicit, binary, named, directed associations
 - complement implicit spatial relationships
 - protocol does not (yet) specify particular relationships
 - open issue: typology of relationships
 - **“common usage parent”**
 - ◆ San Diego → California
 - ◆ London → England
 - **“topological partition”**
 - ◆ countries → states, states → counties, etc.



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Services

- Six services
 - usage
 - **get-capabilities**
 - access
 - **query, download**
 - maintenance
 - **add-entry, relate-entries, remove-entry**
- Stateless, independent, synchronous, optional
- SOAP-like, XML-over-HTTP formulation
 - POST to common URL
 - requests & responses encoded in XML
 - protocol defined using XML schemas
- Access control not addressed



Services

- **get-capabilities()** → *capabilities description*
 - what thesauri, services, query types, etc., are supported
- **query**(*query*, *report format* [, *geometry lang*]) → *reports*
 - returns all entries that match a query
 - two report formats: standard & extended
 - geometry language (GML, ArcXML, ...) negotiable
- **download**(*report format* [, *geometry language*]) → *reports*
 - downloads entire gazetteer
- **add-entry**(*report*) → *identifier*
- **relate-entries**(*relationship*, *identifier₁*, *identifier₂*)
- **remove-entry**(*identifier*)



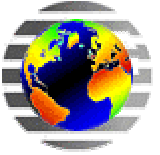
Query language

- Five fundamental constraint types...
 - **identifier**
 - **find gazetteer entry #314159**
 - **name**
 - **find placenames containing the phrase “San Diego”**
 - **footprint**
 - **find everything that overlaps a given region**
 - **class**
 - **find all cemeteries**
 - **relationship**
 - **find the capital of California**
- ...and boolean combinations thereof
- Language features are optional



Odds & ends

- Report formats
 - **standard**
 - **defined by protocol**
 - **corresponds to abstract model**
 - **extended**
 - **gazetteer-specific XML schema**
- Geometry encoding languages
 - negotiable
 - GML support is mandatory
 - ArcXML, ...
- Thesaurus/vocabulary protocol
 - TBD



Sample request (abridged)

```
<gazetteer-service version="1.0">

<query-request>
  <gazetteer-query>
    <and>
      <name-query operator="contains-phrase"
        text="san diego"/>
      <class-query thesaurus="ADL Feature Type Thesaurus"
        term="cities"/>
    </and>
  </gazetteer-query>
  <report-format>standard</report-format>
</query-request>

</gazetteer-service>
```



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```

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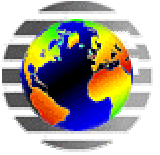
```
</and>
```

```
</gazetteer-query>
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```
<report-format>standard</report-format>
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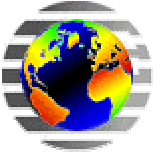


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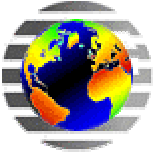


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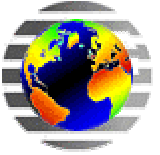


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  </gazetteer-query>
  <report-format>standard</report-format>
</query-request>

</gazetteer-service>
```



Sample response (abridged)

```
<gazetteer-service version="1.0">

<query-response>
  <standard-reports>
    <gazetteer-standard-report>
      <identifier>1001652</identifier>
      <names>
        <name primary="true">San Diego</name>
      </names>
      . . .
    </gazetteer-standard-report>
  </standard-reports>
  <error xsi:nil="true"/>
</query-response>

</gazetteer-service>
```



Sample response (abridged)

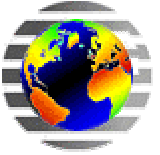
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    <gazetteer-standard-report>  
      <identifier>1001652</identifier>  
      <names>  
        <name primary="true">San Diego</name>  
      </names>  
      ...  
    </gazetteer-standard-report>  
  </standard-reports>  
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        <names>
          <name primary="true">San Diego</name>
        </names>
        ...
      </gazetteer-standard-report>
    </standard-reports>
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```
</names>
```

```
...
```

```
</gazetteer-standard-report>
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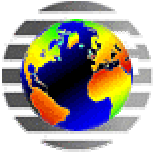


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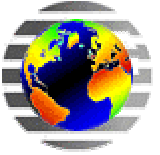


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For further information...

<http://www.alexandria.ucsb.edu/gazetteer/>

general questions

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protocol questions

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