

Automated semantic validation of crowdsourced local information - the case of the Web application "Climate Twins"

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What is it all about?

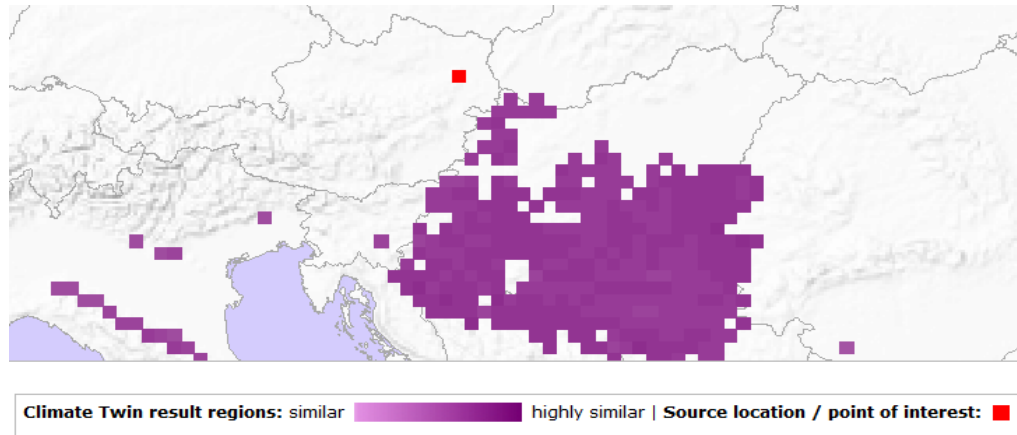
- Climate Twins is a simple-to-use Web tool for visualizing regional climate change in Europe, <http://foresight.ait.ac.at/projects/tatoo/> (Beta-version, ongoing modification!)
- Users of Climate Twins shall enrich the original information base (data on temperature and precipitation only) by adding further geo-located information
- Adding information is completely free → problem of safeguarding the quality of the crowdsourced information
- Possible solution: using the Domain Ontology of Climate Twins for semantically validating the coherence of new entries in order to prevent incorrect links

The Climate Twins Web tool

- Shows for a certain region (Point of Interest) other regions in Europe which have similar climate conditions today
- User locates the grid cell he/she is interested in (POI) on the map "Selection" in the Climate Twins Web application
- User selects the future time period for the POI and the reference time period for all other grid cells (decades between 1961 and 2100)
- User chooses the climate parameters (temperature or precipitation or both), the similarity measures (proportional similarity or Hellinger coefficient), the part of the year to be compared (the whole year or one of the four seasons), the weighting of the climate parameters (if both are selected) and the similarity measure thresholds (the closer to 1, the less grid cells will be found with a similar climate)
- Results are displayed in the "Results" map showing the places in Europe that have similar climate conditions today as they are projected to be in the future at the POI

Involving users to enrich the information of Climate Twins

User uploads a link to a certain resource to be shared with other users by accessing the "Add Info"-tab within the Climate Twins interface



Search Results **Add Info**

Climate Twins Raster ID Select Municipality

Municipality selected Country

Coordinates

Topic [Help](#)

Link

Title

Add a description of



* Reference



Tagging Tool based on a Semantic Discovery Framework

TaToo is a semantic web solution to close the discovery gap that prevents full and easy access to environmental resources on the Web. The core of the project consists of tools allowing third parties to easily discover environmental resources on the Web and to add valuable information in the form of semantic annotations to these resources, thus facilitating future usage and discovery, and kicking off a beneficial cycle of information enrichment. The TaToo-Consortium has developed a semantic-based framework which is generic, application-independent and allows the integration of ontologies pertaining to different environmental domains, in order to face the challenges posed by a multi-domain and multilingual context.

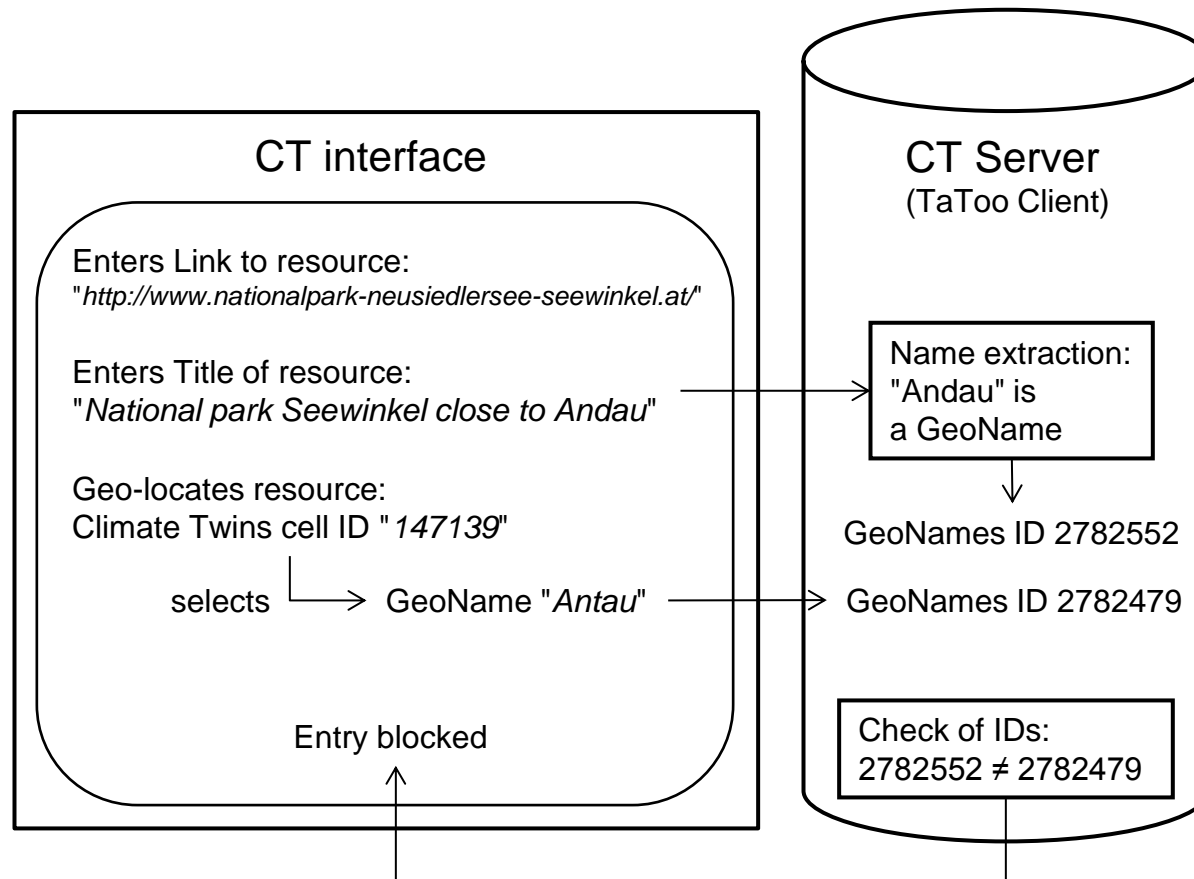
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How to safeguard quality of user entries?

- Crowdsourcing of resources in Climate Twins is completely free, there is no way for the publisher to block or remove weak resources or incorrect entries.
- The TaToo Domain Ontology of Climate Twins offers a potential solution:
 - checking the consistency of GeoName IDs of entries to prevent the misplacing of resources
 - checking the validity of the co-occurrence of (ontology) concepts to prevent the incorrect description of resources by disjoint concepts

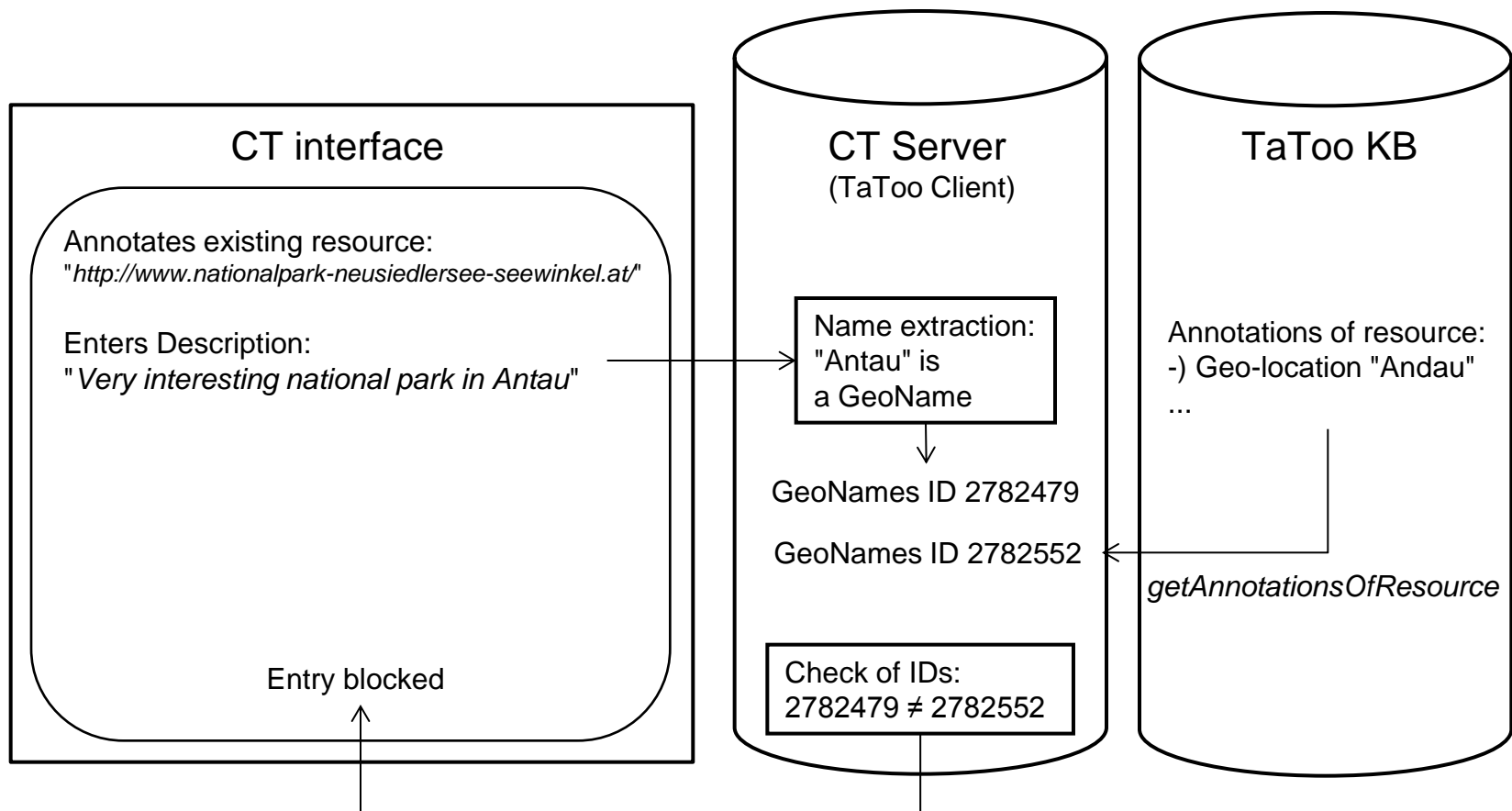
1st case: Misplacing a resource

User geo-locates a resource incorrectly = 2 different GeoName IDs for the same resource



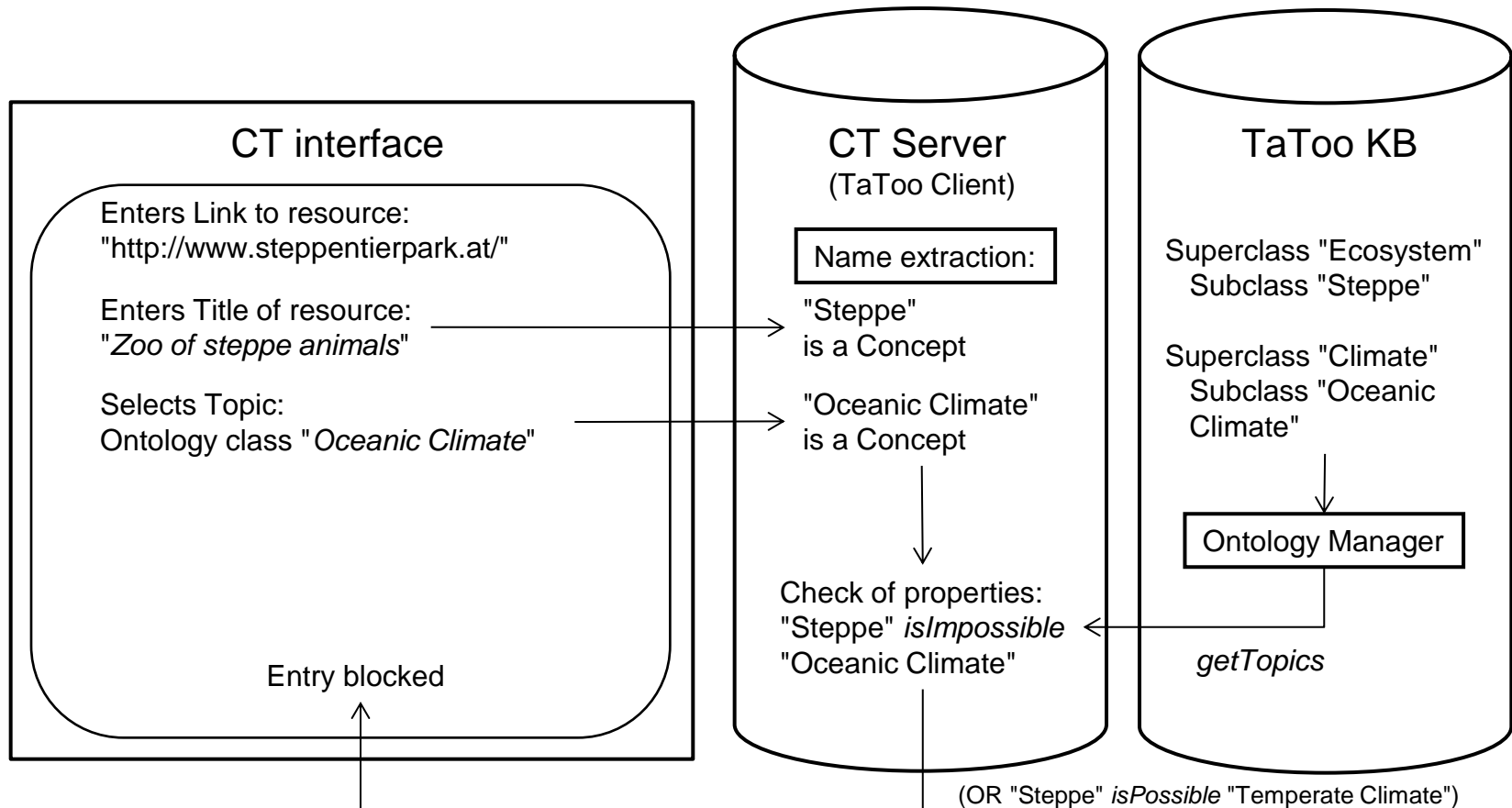
Possibly: Misplacing a follow-up annotation

User annotates a resource with an incorrect geo-location = 2 different GeoName IDs for the same resource



2nd case: Selecting a topic that is incorrectly related

User selects disjoint concepts to describe a resource =
 2 ontology concepts which preclude each other for the same resource



Outlook

- Finishing the implementation of Climate Twins-side procedures to check consistency of IDs and concepts
- Improvement of name extraction
- More comprehensive Domain Ontology
- Implementation of the Ontology Manger (dynamic ontology concepts)
- Meaningful feedback to users in case of inconsistent entries
- Better usability of Climate Twins overall