



Quality of Urban Life IG Summary

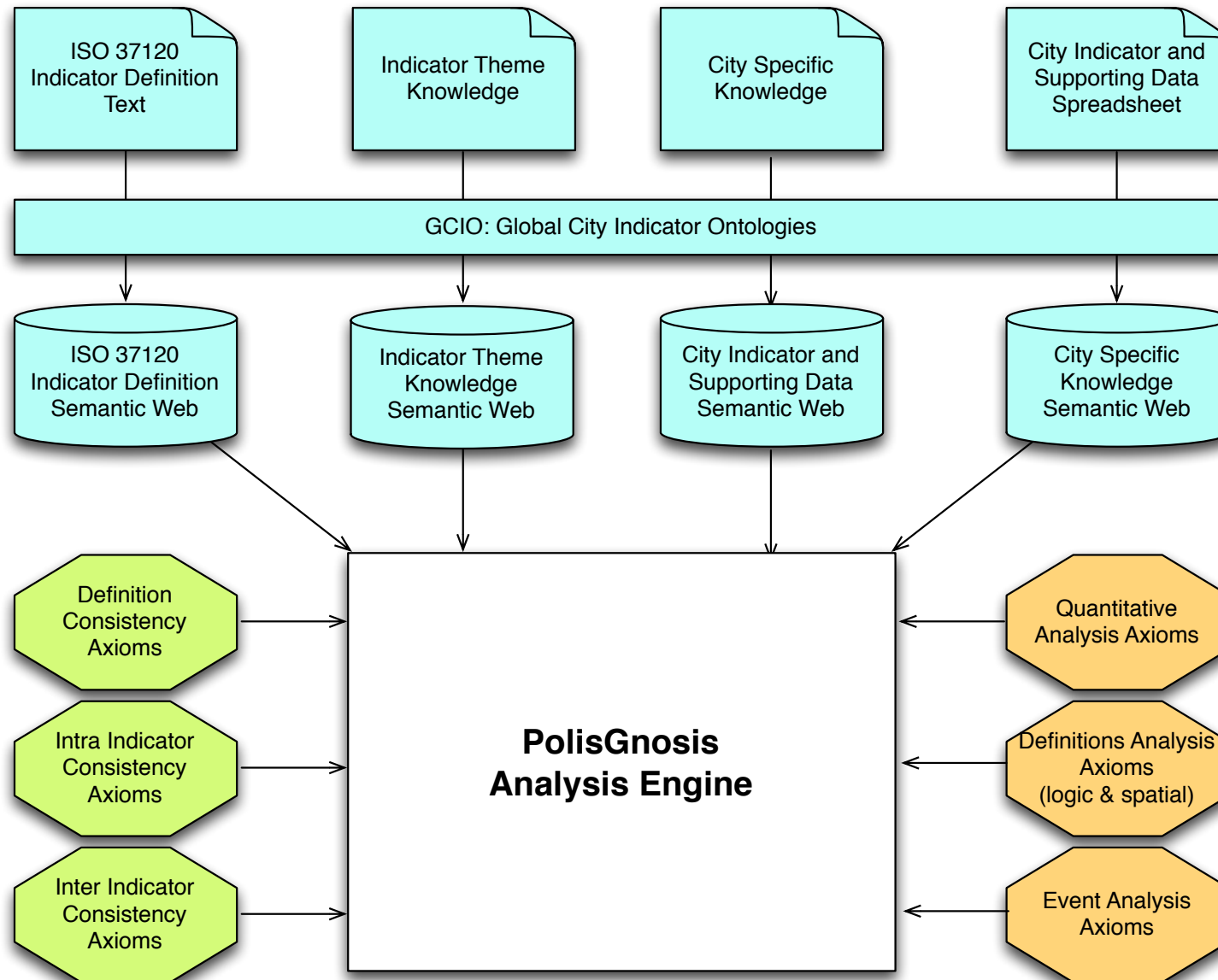
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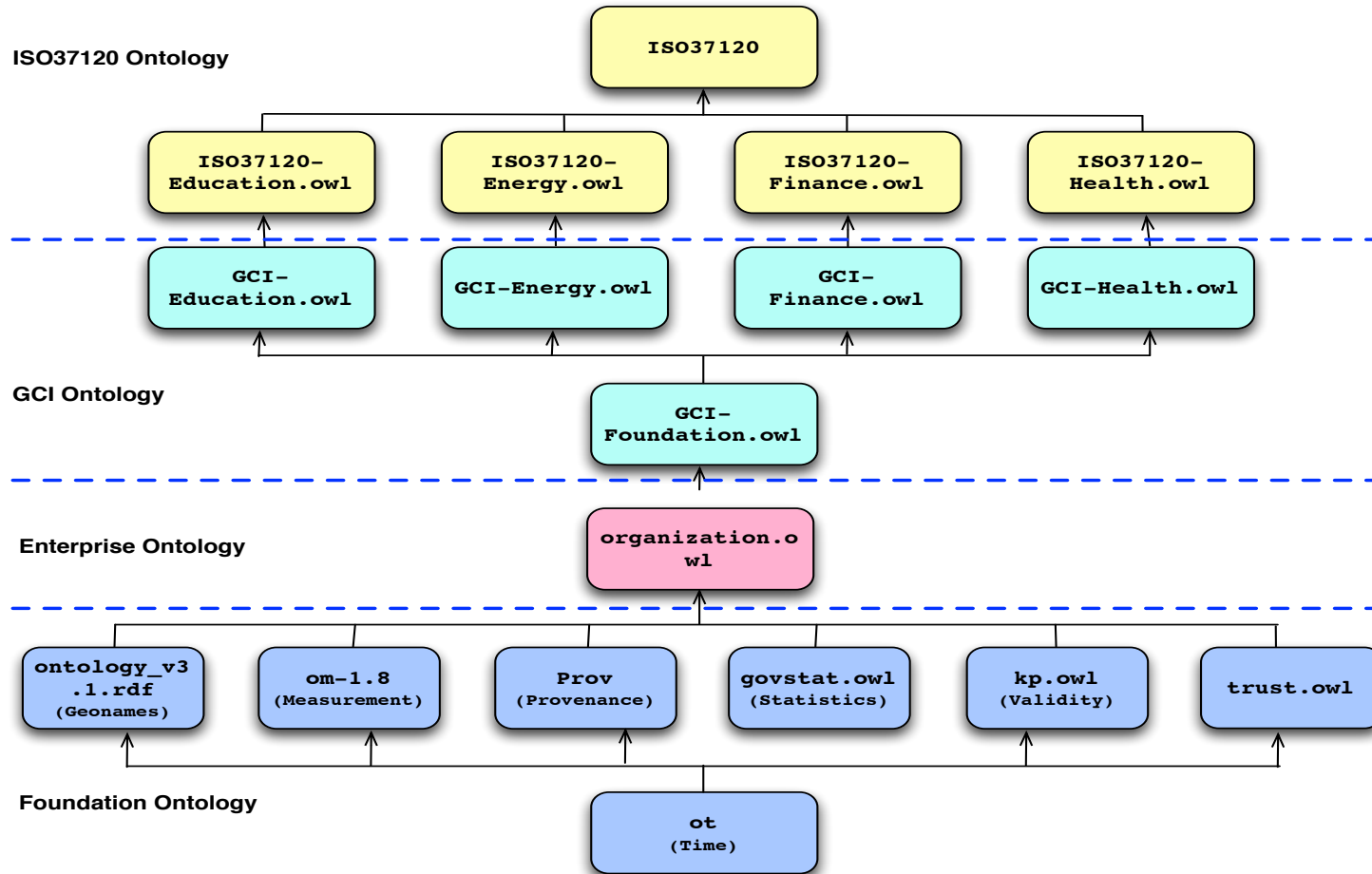
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PolisGnosis Project



GCI Ontologies Structure



Presentations

- **Australia:**
 - City Dashboard (UNSW)
 - Urban Analytics Data Infrastructure (Queensland)
- **UK:** Urban Big Data Centre (Glasgow)
- **Canada:** Global Urban Data Repository (Toronto)

Proposed RDA QoUL IG Projects

- Meta Data ontology
- Indicator foundation ontology
- Repository interchange format

Urban Meta-Data Project

- Cities, and especially ‘smart’ cities, are generators of vast amounts of information, from data which is generated by delivering city services to citizens, to data from heterogeneous data sources which is used to enrich the understanding of the city and deliver not just Smart but sustainable cities. As this data flows between the city and organisations using both open and shared data, the importance of making meta data available increases. Meta data includes information such as:
 - Measurement: quantities and units of values,
 - Provenance: how the value was derived and by whom,
 - Time: when a value is valid, or when it was produced,
 - Validity: the degree to which a value is believed to be correct, and
 - Trust: the degree to which the individual or organization is trusted to produce a value correctly.
- The problem is that the sources of this meta data are buried in datasets and documents that are mostly inaccessible. In the end, we are left with values that we cannot verify; we have to rely on the good will of the people who reported to the data. This missing meta-information amounts to an “unwritten narrative” which can be found in the minds of the people who created the values and is verbally passed on to others.
- Why is this “unwritten narrative” important? If we want to compare data across two or more cities, the simplest consistency test is to see they have the same units. Without this measurement meta data, the test cannot be performed. Without provenance meta data, we cannot verify that the process used by one city is consistent with another; a difference in process can introduce significant variation.
- This project will develop standard that specifies an ontology for representing meta-data for Smart Cities data.

Indicator Foundation Ontology

- The ultimate goal of publishing a city's indicators is to enable the performance of longitudinal analysis (i.e., how and why a city's indicators change over time) and transversal analysis (i.e., how and why cities differ from each other at the same time). In other words, to discover the root causes of differences and act on them. However before we can focus on analysis, we have to solve the indicator representation problem. The representation problem can be divided into four parts:
 1. How do we represent the (ISO 37120) definition of an indicator? In order for the analysis of indicators to be automated, the software must be able to read and understand the definition of each indicator, which may change over time.
 2. How do we represent the data used to derive an indicator value? An indicator is the apex of a tree of supporting data that is aggregated across place, time, organizations, etc. How is this represented?
 3. How do we represent ISO 37120 theme specific knowledge? Each theme, such as Education, Health, Shelter, etc., has a core set of knowledge, that has to be represented in both the definition of an indicator and in publishing an instance of an indicator and its supporting data.
 4. How do we represent a city's theme specific knowledge? Each city may define concepts such as "primary school", "grades", "teachers", etc. differently. Differences in indicator values may be due to differences in the interpretation of these terms between cities.
- Standards do not exist for publishing these types of data. This project will define a standard for representing and publishing data used by cities to derive their indicators. Secondly, this standard will also be used to publish ISO 37120 and other indicator definitions in a machine readable form. The availability of an upper level ontology for indicator definitions and supporting data will enable the development of software tools that can read, analyse and identify root causes of city performance. This project will deliver an international standard that specifies an upper level ontology for representing Smart City indicator definitions and the data used to derive them.

Urban Repository Interchange Format

- With the growth urban data repositories across the world, there will be a need for these repositories to share data sets. This project proposes to develop an interchange format that will enable repositories to communicate urban data sets across the internet