

Towards an Extensible Web-Based Open-Source Graphical Ontology Editing Framework

OWLGrEd is a *graphical ontology editor* for Windows.

Main use cases:

- Import ontology, then adjust it graphically.
- Create an ontology from scratch, then export.

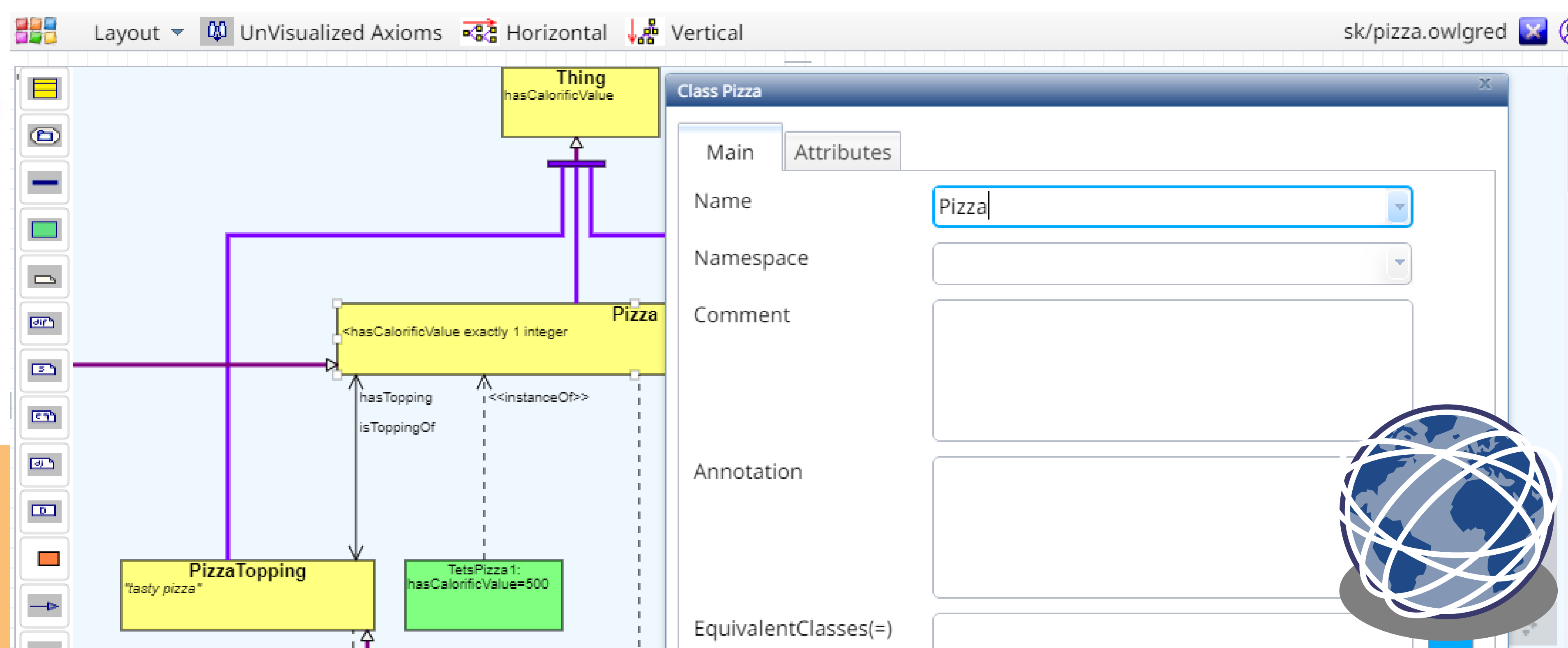
Regretfully, OWLGrEd was implemented for Windows only. Besides, it had some third-party closed-source license restrictions.



webAppOS+OWLGrEd =

New web-based Graph Diagram Editor and Dialog Engine

For computing the layout, we use advanced quadratic optimization-based algorithms.



$$\text{minimize } \sum_{0 \leq i < n} a_i x_i^2 + \sum_{0 \leq i < j < n} b_{ij} x_i x_j + \sum_{0 \leq i < n} c_i x_i \quad \text{subject to: } x_i - x_j \geq d_{ij} \quad 0 \leq i, j < n$$

Existing OWLGrEd features:

- main OWL 2.0 constructs mapped to graphical UML elements
- Manchester syntax for auxiliary constructs
- adjustable:
 - domain-specific profiles can be used to modify graphical elements based on annotations
 - user-defined extensions can alter the visual appearance of elements

References

- J. Bārzdīņš, G. Bārzdīņš, K. Čerāns, R. Liepiņš, A. Sproģis: "UML Style Graphical Notation and Editor for OWL 2", in Perspectives in Business Informatics Research, Lecture Notes in Business Information Processing, Volume 64, Part 2, pages 102-114, 2010.
- K. Čerāns, J. Ovčinnikova, R. Liepiņš, M. Grasmanis: "Extensible visualizations of ontologies in OWLGrEd", in ESWC 2019 Satellite Events, 2019.

New OWLGrEd/webAppOS features:

- web-based
- open-source
- accessible by 3rd parties (thanks to webAppOS!):
 - manipulate the ontology diagram from the outside
 - collaborate
- can be launched as a cross-platform desktop app

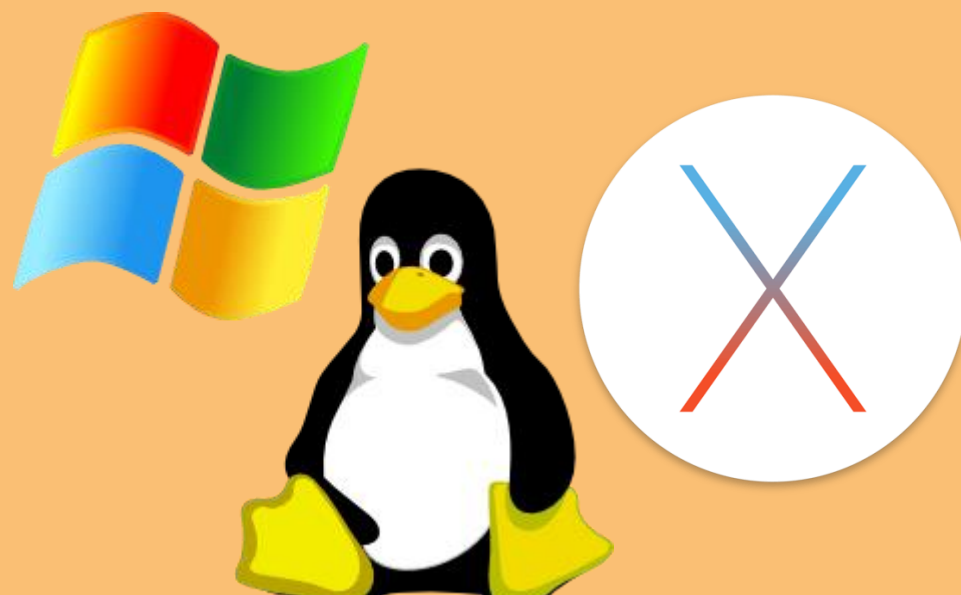
References

- S. Kozlovičs: "The web computer and its operating system: A new approach for creating web applications", in Proceedings of the 15th International Conference on Web Information Systems and Technologies, 2019.
- S. Kozlovičs: "Fast model repository as memory for web applications", in Selected papers of 13th International Baltic Conference on Databases and Information Systems, Frontiers in Artificial Intelligence and Applications, Volume 315, 2019.



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Cross-platform desktop and cloud versions expected in 2020.