OpenBEL Home

Why BEL?

BEL for Recording Knowledge

BEL as a semantic triple representing language has been designed and used by our scientists and our customers for almost a decade. The language has been specifically designed to help scientists record life science facts in a way that is intuitive, easy to learn, concise, and appealing. A good language should help the user articulate an idea in a manner that is unambiguous, terse, and conveys the facts and associated contexts without loss or ambiguity. BEL is designed to do just this for life science applications.

The current version of the language is small which makes it easy to learn, supports both causal and correlative relationships as well as negative relationships which makes it suitable for recording a variety of experimental and clinical findings, can be used with almost any set of vocabularies and ontologies which makes it highly adaptable and easy to adopt, and can be easily extended to annotate findings with use-specific contexts such as experimental and clinical parameters.

BEL for Computational Models

BEL is designed to record scientific facts and associated experimental contexts. The BEL Framework makes those facts computable by assembling facts into networks which can be interrogated and traversed to explore relationships and identify pathways that connect biological entities. The networks created are called Knowledge Assembly Models (KAMs) which can be loaded and interrogated using standard graph-type interfaces.

The BEL Framework provides a unique knowledge compiler/assembler that you can use to create and customize KAMs which meet the needs of your applications, and a set of rich application programming interfaces (APIs) that allow you to easily incorporate the KAMs into your research and existing applications. There is also a set of utilities which can import and export knowledge in a variety of industry-standard formats including RDF and XGMML so you can use them in your favorite applications.

BEL as an Integration Platform

The major challenge in the use of prior knowledge to support scientific investigation and decision-making is standardizing the representation of unstructured knowledge and presenting it in a consistent and computable format for use by a broad range of analytical and decision-support applications. While many such representations exist for capturing pathway-based knowledge, few, if any, general-purpose approaches exist for capturing, integrating, and storing content from multiple knowledge streams, thereby providing the ability for an organization to integrate knowledge from disparate internal and external sources into a comprehensive knowledge base for use across a broad spectrum of applications. The net result of this deficiency is that prior knowledge from different knowledge streams within an organization is usually stored in "data islands" consisting of different formats using different vocabularies and ontologies, generally in different locations within the organization, and often in such a way that each format can only support a specific application rather than a broad range of analytical and decision-support tools.

BEL and the BEL Framework help address many of these challenges by separating the processes of collecting, sharing, and using knowledge into discrete workflows. Together with a set of flexible deployment scenarios, the BEL Framework enables organizations to easily design efficient, sustainable processes for sharing knowledge with internal groups and external business partners, combining knowledge from different sources into comprehensive Knowledge Assembly Models, and developing knowledge-driven solutions which are not tied to proprietary knowledge structures or representations. Best of all, you will soon be able to download the BEL Framework source code and customize and extend the language and framework to meet the needs of your organization.

Get started right now with our Quick Start.

Installation Overview - BEL Framework and Related Tools

Training Materials