

“Knowledge Management”: Issues and Solutions from the Vendor’s Perspective

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Recently, “knowledge management” became one of the most popular buzz-words in the pharmaceutical and biotech industries. This term is associated with a paradigm shift in life science IT from data collection, integration and management (currently, a realm of IT professionals and computational scientists) to “data mining” and analysis to be done by end users – biologists, chemists and clinicians. The shift from “IT” to “knowledge management” requires unified representation of different types of data, significant simplification of data exchange and communication between different groups within drug discovery, and development of intuitive visualization and analytical tools for “functional” analysis – such as biological pathways and networks. Some of important issues to be discussed include:

- Knowledge organization – terms, vocabularies and ontologies. Currently, life sciences “knowledge space” is highly compartmentalized alongside the field of study. Each discipline operates in its own semantic environment, with terms not aligned or incompatible between the fields. This problem is particularly pronounced in novel “hybrid” fields such as translational medicine or “systems pharmacology”.
- Data organization and semantic consistency between databases. Every “knowledge base” in life sciences has its own philosophy and purpose, reflected in data structure, exchange and retrieval tools etc. In the absence of mandatory “common speech” standards, the databases are poorly compatible.
- Communication between different specialty groups within drug discovery. Different groups of end users apply different terminology and tools which need to be unified through synonyms and vocabularies.
- Standardization of terms, concepts and ontologies throughout the industry and public domain.

As one of the leading providers of tools and databases in pathway biology and functional data analysis, GeneGo is deeply involved in the transition to the “knowledge management” paradigm in life science IT. I will describe the challenges, possible solutions and the time frame the way we see it from a vendor’s perspective.