BioSpectrum the business of Bio & Health Sciences

Information Management Technology

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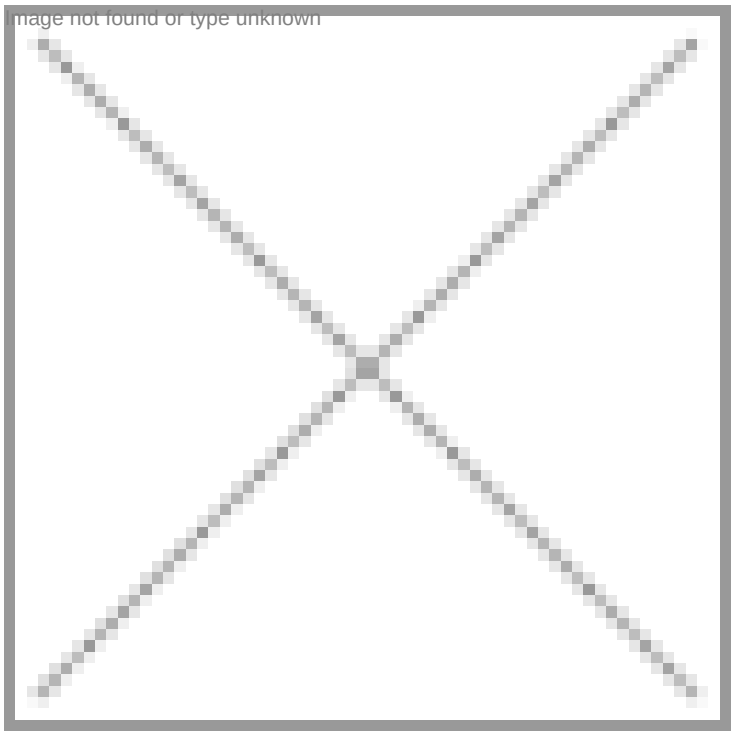

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Laboratory informatics has a much broader application area-scientific research from drug discovery to production.

Information science or "informatics" is the science of information. It is often studied as a branch of computer science and information technology and is related to database, ontology and software engineering.

Informatics is primarily concerned with:

- Creating and structuring data
- Management, storage and retrieval of data
- Distribution and transfer of information

Informatics is about the transformation of information by computation or communication; by machines or people. It is the intersection of artificial intelligence, cognitive science, computing science and related fields. Informatics focuses on

understanding business or scientific research challenges and applying information technology as the solution-tackling the problem first rather than technology first. It combines software applications, search technology, database storage and tools for digitally-enabled collaboration.

Laboratory informatics

Laboratory informatics is the specialized application of information technology to maximize laboratory operations, particularly in analytical, production and research and development. Laboratory informatics encompasses data acquisition, data processing, data analysis and long-term archiving, electronic laboratory notebooks, laboratory information management, laboratory automation, scientific data management, document authorship, review and approval.

Is there a difference between bioinformatics, cheminformatics and laboratory informatics? Bioinformatics and cheminformatics are terms that describe specific areas of information management.

What are common areas of informatics?

While bioinformatics refers to the use of computing methods to create, organize, retrieve and analyze databases of biological information, such as the nucleic acid sequence data contained within a genomic database.

- Bioinformatics- Informatics in biology, especially genomics
- Cheminformatics Informatics in chemistry and drug discovery
- Ecoinformatics- Informatics in ecology and environmental science
- Legal informatics- Informatics in the legal field
- Library and information science Informatics in libraries
- Medical informatics Informatics in medicine and healthcare
- Knowledge management Informatics and knowledge
- Laboratory informatics Informatics in the laboratory environment

Cheminformatics focuses on the collection, storage and analysis of chemical structures and syntheses, pharmacological studies and combinatorial chemistry to facilitate drug discovery and development.

These areas of informatics are called vertical informatics domains since they deal just with a subset of applications.

Laboratory informatics has a much broader application area; it touches all areas of scientific research from drug discovery to production. Therefore it is called a horizontal domain.

Horizontal informatics solutions

A horizontal informatics solution provides more benefits to an organization, because it addresses broad-scale issues such as compliance, data archiving, collaboration and sharing information, and capturing knowledge.

Horizontal applications are generic by nature. Laboratory informatics solutions can be implemented in a lab, in a department or throughout an enterprise-as well as in the vertical domains of bioinformatics, cheminformatics or other scientific environments.

Companies derive the most value from intellectual property rather than physical assets. To derive the most value from a company's intellectual assets, knowledge must be shared among a company's strategic decision-makers, though leaders, scientists, and other research team members, serving as the foundation for collaboration.

There is no universal definition of knowledge management (KM). A simple definition: knowledge management is the process through which organizations generate value from their intellectual and knowledge-based assets.

Generating value from such assets involves sharing them among employees, departments and even with other companies in an effort to devise best practices.

But what constitutes intellectual or knowledge-based assets? There are two categories, explicit (tangible) and tacit (intangible). The examples of explicit knowledge include patents, raw data, reports, results, pictures, drawings, publications, and ideas. The explicit knowledge consists of anything that can be documented, archived, and codified. Tacit knowledge- or know-how-is contained in people's heads.

The challenge inherent in tacit knowledge is figuring out how to recognize, generate, share and manage it. Even simply identifying tacit knowledge is a major hurdle for most organizations.

How can laboratory informatics help to manage knowledge in labs? Each laboratory has basic needs it must manage such as furniture, supplies, waters, gas, power and glassware.

Scientists can easily identify these requirements if you ask them, but what about information? Do they have to sift through numerous paper archives, databases and applications to find information? Are you they able to work in a consistent application environment? Are they concerned about the company's ability to manage data compliance and intellectual property on a global scale?

All laboratories share a basic need to capture both explicit and tacit knowledge. And there are solutions available like for instance Waters offers powerful solutions for capturing and managing both explicit and tacit knowledge through Waters NuGenesis Scientific Data Management System (SDMS), eLab Notebook Software.

Extract from "A Guide to Information Management Technology" of Waters Laboratory Informatics.