

# Semantic Infrastructure Concept of Operations Vision

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## Vision Statement

NCI's vision is to reduce the burden of cancer on patients and the nation. The caBIG® mission is to support this vision by creating a virtual web of interconnected data, analytical resources, individuals, and organizations that redefines how research is conducted, care is provided, and patients /participants interact with the biomedical research enterprise. This mission is informed by and supportive of the broader DHHS effort to build a comprehensive health IT infrastructure that supports personalized medicine and integrated care.

The vision of the caBIG® infrastructure is to:

- Connect the cancer and broader medical and research community through shareable, interoperable "network of networks".
  - Support the business/transaction/message based dynamic semantics that will underlie the emerging information infrastructure supporting healthcare delivery
  - Deploy and extend standards and a common syntax and semantics to more easily share information.
  - Build and adapt tools for collecting, analyzing, integrating and disseminating information.
  - Enable cancer centers and vendors to leverage this infrastructure to provide support of the broader community.
- The Semantic Infrastructure and Operations Group composes the semantic aspects of the CORE Program Area, the caBIG® Vocabulary and Common Data Elements Workspace, and certain aspects of the caBIG® Architecture Workspace, and caGrid.

## Management Personnel

Management personnel for caBIG® Semantic Infrastructure and Operations includes:

- **Product Management**
  - Director for Semantic Infrastructure and Operations (vacant - Dave Hau, Larry Wright (acting))
  - Director for Enterprise Vocabulary Services (Lawrence Wright (acting))
  - Associate Director for Products and Programs, Core Infrastructure and caDSR (Denise Warzel)
- **Content Management**
  - Associate Director for Enterprise Vocabulary Services (Margaret Haber, Lawrence Wright)
  - Senior Biomedical Informatics Specialist (Sherri de Coronado, Gilberto Fragoso)
  - Associate Director for Biomedical Data Standards (Dianne Reeves)
- **Engineering Management**
  - Director for Core Infrastructure Engineering (Avinash Shanbhag)
  - Associate Director for Semantic Infrastructure Engineering (David Hau)
  - Associate Director for CORE Infrastructure Engineering (Sichen Liu)
  - Senior Biomedical Informatics Specialist (Gilberto Fragoso)

## Activities

The activities of the NCI CBIIT Semantics and Operations Group fall into three areas:

- **Content Management** - the processes and procedures that ensure the breadth and quality of the metadata and terminology used to record the semantics of data meet the needs of the caBIG® community.
- **Semantics Infrastructure** - design and development of software resources and operations including producing reference implementations of platform independent models. A roadmap for the Semantic Infrastructure in a sSOA environment is being developed through summer 2010.

- **Semantics Architecture and Management** - defining the platform independent (as also called "implementation Independent") specification for systems and processes required to meet the semantics needs of the CBIIT and caBIG® enterprise, and for assuring that operational requirements for semantics support are met in a timely and reliable way.

## Goals

The vision is to provide computational and human interpretable representation of the meaning and context of data and services. Realization of this goal is vital to enabling the caBIG® community to revolutionize biomedical research, personalized medicine, and integrated care. To achieve this vision, the semantic infrastructure must:

- Continue to provide caBIG with computationally tractable representations of the meaning and representation of data, and to extend semantic support to analytic and other services so that they can be discovered, understood, and securely utilized.
- Utilize a consistent, comprehensive information management discipline and standards such as ISO 10746 RM-ODP to define both enterprise semantics needs and implementation neutral solutions to meet those needs.
- Provide reference implementations of enterprise-level platform independent models addressing semantic needs, especially the need for behavioral semantics.
- Reduce the level of effort associated with creation of semantic information, in part by leveraging to the greatest extent possible automated approaches to harvest semantics information from line of business and software engineering activities