Knowledge Specification Layers
Partner Brief

Description

The goal of the Clinical Decision Support (CDS) Consortium research contract is to assess, define, demonstrate, and evaluate best practices for knowledge management and clinical decision support in healthcare information technology at scale – across multiple ambulatory care settings and EHR technology platforms. CDS Consortium has developed a novel approach of multilayered knowledge representation that can enhance the sharing of codified knowledge for use in CDS systems. Knowledge is translated from human readable form to an executable implementation through a series of four specification layers. This process is designed to provide flexibility so that knowledge artifacts are available at various levels of encoding and CDS integration. Depending on an organization's requirements, knowledge artifacts from different layers can be integrated into the organization's knowledge management and CDS implementation process.

Layer one: Unstructured

This layer represents the narrative or textual guidelines that are published by the guideline developers. These guidelines present a synthesis of evidence and expert opinions.

Layer two: Semi-structured

In this layer the knowledge of individual recommendations, in text form, is organized and encapsulated as recommendations for clinical decisions. This layer is designed for clinical subject matter experts to define CDS specifications.

Layer three: Structured

In this layer, knowledge is encoded by a clinical knowledge engineer so as to incorporate formal logic statements, data definitions including terminology mappings, and structured actions. A structured recommendation serves as a formal specification for implementation of CDS in a clinical application as described next.

Layer Four: Implementation

Knowledge is encoded in a specific EHR system in available CDS modalities such as an order set or a reminder. The latter can be implemented as an Arden Syntax MLM, for example. The CDSC also has implemented a CDS web-service that can be integrated with any EHR system for providing decision support. See "Machine Executable Brief" for more information.

Gains/Benefits

These products can be rapidly integrated into a health care organization's CDS without having to redesign their system. CDS is the cornerstone of best practices and these solutions offer a CDS system without the higher cost and need for resources of more sophisticated systems, while still retaining clinician and patient benefits. For more detailed information on the advancements by the CDSC please refer to the CDSC website: www.partners.org/cird/cdsc/. For specific questions about layers, please email Aziz Boxwala at aboxwala@ucsd.edu or Lana Tsurikova at rtsurikova@partners.org.