**Term list: Informatics session 3, LIS and Health Information Systems, v. 1.0.1**

Accessioning

Registering one or more specimens as having been received by the lab. Linkage of specimens with orders, patients, and physicians may occur at accessioning. If barcode labels are printed at sampling, that linkage may occur at labeling with accessioning indicating receipt of the specimen by the lab. In APLIS, case building may occur at accessioning and involves grouping multiple specimens into a case that is associated with an order, patient, and physician.

ADT system and ADT interface

ADT stands for Admit, Discharge, and Transfer. An ADT system is a core clinical system that keeps track of patients and their locations, and provides patient names, locations, and demographics to other systems via system interfaces.

Ancillary systems

Information systems that are smaller in scope than primary systems such as EHR, ADT, or financials, and focused on a particular set of tasks or domain. Clinical service or departmental systems such as pathology LIS, radiology PACS, and OR scheduling systems are examples of ancillary systems. They may be chosen as part of a “best of breed” strategy (separate interfaced systems from different vendors) or may be a module in a larger integrated system.

APLIS

Anatomic Pathology Laboratory Information System. APLIS are core pathology systems that provide database and workflow support for anatomic pathology services. APLIS are specimen-oriented and have an order-result organization like LIS, but are distinguished by grouping one or more specimens into cases that are interpreted as a unit, and by extensive use of natural language results in addition to structured data.

Back end

In a client-server database system, the back end is the database management software that does the data storage and processing. It runs remotely on a central server computer, receiving commands and returning data over the network to client computers.

Best of breed

An IT environment consisting of separate purpose-built information systems that each perform functions within their own domains and communicate with each other via system interfaces. Each system maintains its own separate database. The name came from a time when separate systems from different developers were considered higher quality for their intended purpose than integrated systems from a single developer, though in aggregate the separate systems were more complex to maintain. Sunquest and Soft are examples of separate LISs.

Case-oriented

Cases are the primary organizing data element of APLIS, which distinguishes those systems from LIS (specimen-oriented) and EHR (patient-oriented). Cases are associated with patients and may have multiple parts and specimens that are interpreted in aggregate.

Certification

Some health information systems such as EHR are certified by CMS and the Office of the National Coordinator of Health IT. Installation of certified systems is required to receive incentives and avoid penalties related to health IT. Certification confirms that systems support required functions. In addition, to receive incentives and avoid penalties, healthcare providers must deploy and use the required functions in certified systems, which was initially confirmed through the Meaningful Use (MU) program that evolved into the Merit-based Incentive Payment System (MIPS) and Quality Payment Program (QPS). LIS are not currently required to be certified, though the issue has been raised for discussion by regulatory agencies.

Client-server

A software and hardware system design in which multiple user computers (clients, front end) communicate over a network with a centralized data store (back end) on a server computer. The software on the clients provides tools to work with the data, and the server software managing the data store communicates with the clients over the network to receive requests for data and respond to them.

CPOE

Computerized Physician Order Entry. A goal of electronic order entry systems because it allows decision support for orders to be delivered to the person responsible for choosing the orders.

EHR

Electronic Health Record, also sometimes called an electronic medical record (EMR). EHR usually include order entry and results display module, and also provide manual and electronic data acquisition and display for the general inpatient and outpatient encounter and procedure records. EHR are patient-oriented and designed primarily for physician and nurse use. They are distinct from ADT (patient tracking) and financial/billing systems, although those functions may be combined with an EHR in an integrated system.

Environment

In a computer context, an “environment” is a self-contained set of resources in which data can be managed and programs can run. Different environments on the same computers or within the same program don’t affect each other. High reliability systems such as health information systems (including LIS) typically implement a “production environment” in which routine work is carried out, and also provide a “build” environment and one or more “test” environments in which configuration and software changes can be made and tested before moving them to the production environment. These systems typically provide automatic processes to copy changes between environments so the changes don’t have to be re-entered by hand in each environment.

Front end

In a client-server database system, the front end is the client software running on a computer that usually is used by people to communicate over a network with database management software running on a central server.

Integrated system

A healthcare data system design in which multiple system functions (ADT, EHR, LIS, radiology, and many others) are integrated as modules running in a common IT environment against a common database. Integrated systems do not require system interfaces between their modules. This design can be more efficient and easier to manage than separate, interfaced systems with their own databases (ie, Best of Breed). However, building high quality systems for all functions is a challenge for a system developer. Epic, Cerner, and Meditech are examples of integrated systems.

Interface engine

A server computer that is designed to manage system interfaces and avoid the problem of many separate interfaces between each pair of systems needing connection. Each system connects to the IE once, and then its data can be routed to multiple other systems through their connections to the IE, and vice versa. IE often manage mapping tasks, where codes and IDs specific to one system are converted to the corresponding values for another system as part of the interface.

LIMS

Laboratory Information Management System. A laboratory information system that differs from LIS by being experiment-centric rather than patient- or specimen-centric. Typically supports research or product preparation workflows rather than a clinical order-result paradigm.

LIS

Laboratory Information System. LIS are core pathology systems that provide database and workflow support for clinical laboratory operations. LIS are distinguished from most other health information systems by being specimen-oriented with an order-result organization. Most data in LIS are structured, though the data content is often defined locally (i.e., test codes) rather than standardized.

Maintenance tables

Database tables in LIS and APLIS that govern how the system works, ie, system configuration. Maintenance tables contain, for example, user names, test codes, reference ranges, lab and patient care locations, calculations and rules, popup menu contents, and many other data required for operation of the system. The use of “table” in this context is general and doesn’t necessarily refer to a relational database table (though it could).

MPI

Master Patient Index. In some system designs this is a function that standardizes patient identity across all associated systems. In some cases this function is handled by the ADT system.

MUMPS

Massachusetts General Hospital Utility Multi-Programming System. MUMPS is a database programming language and management system developed for medical information systems in the 1960’s at Mass General Hospital. It is fast, efficient, reliable, and widely used in healthcare and finance. MUMPS databases are essentially hierarchical in form, but MUMPS has developed over the years to have features that mitigate some of the limitations of hierarchical databases. The portions of Epic that support daily operations (ie, high speed, real time update and retrieval of small amounts of data) are written in MUMPS.

Order-result paradigm

The requirement that all results be associated with an order. Common (though not universal) in LIS and EHR design. Many systems use various kinds of “dummy” orders in cases where testing is needed without usual clinical orders.

SaaS

Software as a Service. A business arrangement whereby a user or organization purchases network access to software and hardware that is operated and managed by a vendor in the vendor’s data center. Communications may be encrypted for security purposes (ie, a virtual private network).

Thin client

In a client-server system, a thin client is a generic software “shell” on a client machine that communicates with a server to receive a user display or downloads software that runs on the client machine to create the user display (the “front end” of the client-server system). Once the display is initiated, it can communicate over the network with a database back end to carry out data management, processing, and display tasks for the client with limited or no data processing on the client. The advantage of a thin client is that client machines automatically receive the most current front end of the client server system each time they log in, so maintenance related to installing software upgrades and fixing configuration problems is reduced. Many modern systems use a Web browser as a thin client.



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