

Understanding Use Cases

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As national health IT initiatives move forward, it is important that HIM professionals understand the role and functions of use cases. Use cases are an extension of workflow analysis, an early and essential step in selecting or designing new health information technology. This article defines use cases and explains how they are used in IT implementations.

A Workflow Analysis Tool

Workflow analysis is the process of identifying and understanding the critical steps, handoffs, and information necessary to successfully complete a business or clinical process. (To read more, see “Analyzing Workflow for a Health IT Implementation” in the January 2008 Journal.) Once the processes are understood, an information system’s functional requirements and specifications can be developed.

A use case bridges the gap between process design (or redesign) and information system development. It is simply a description of how a system works to accomplish a task or set of tasks associated with a process.

There is usually at least one use case for each step or set of steps in a process or workflow. For example, the process of coding a diagnosis requires several steps. However, these steps are usually different for a physician than for a coding professional. Although they essentially accomplish the same goal, the different ways the physician and coder use a system represent different use cases.

A use case that describes and documents the interaction that will take place between a user, or actor, and a system is called a system use case. It describes step by step how the system and actor interact, what information is provided, and what the actor and system do with it.

While its original purpose was to aid in the technical development of information systems, the use case technique has evolved to apply to business issues as well. A business use case is focused on how a high-level business process achieves its goals.

Use Case Components

There is no one standard method for writing use cases. However, use cases should use simple, straightforward, jargon-free language to describe what a system or business process must do. It should avoid describing how it must be done.

Because the actors or stakeholders provide the substantive content for the use case, it is important not to get bogged down and distracted with the design details of the system or business process.

A completed use case typically includes the following information:

- Name, preferably expressed in a simple verb-noun format that describes its goal.
- Description: an overview or summary of the use case; it may include issues and considerations in completing the process.
- Actor(s): person(s) or entity that is external to the actual information system that interacts with it.
- Preconditions: the conditions that must exist before the use case can be initiated.
- Trigger: different than the preconditions, the trigger is a specific event or action that sets off the process.
- Sequence of events: the scenario that describes the steps, one by one, of the interactions between the user and the system.
- Alternative paths: a description of alternatives or exceptions that will be followed when the sequence of events varies from the norm (e.g., when a user does not have a valid user ID or password). This component may or may not appear

in a use case.

- Post-conditions: the conditions that exist after the use case is completed.
- Business rules: policies that have an impact or effect on the process.

The components of a use case may vary in focus and level of detail depending on whether they are for a system or a business use case.

Evaluating Use Cases

Although the technical literature provides various methods for evaluating use cases, a few high-level questions are useful in reviewing and evaluating use cases. These include:

- Is the scope of the use case clearly expressed, stating what is included and what is not?
- Does the use case cover all aspects of the problem it is designed to address? Was anything left out, or were things included that are out of scope?
- Are all key stakeholders and users identified?
- Does the sequence of events in the use case follow a logical order that would make sense to the user? Is the sequence complete?
- Are common dependencies, alternative flows, and exceptions identified and addressed?
- Has descriptive language been avoided that might imply how a step or steps in the process are to be performed or carried out?
- Does the use case achieve its goal or resolve the problem it purports to address?

Thoughtful answers to these questions will provide indications of a use case's completeness and adequacy.

System use cases require review and evaluation by prospective users to ensure that the developers are on the right track.

Whether referring to business or system use cases, review by stakeholders serves to validate the use cases, ensuring that the nuances of various settings and circumstances are captured and that the cases are clear and complete.

Current Use Cases in Process

Use cases are currently being used by the American Health Information Community (AHIC) to advance the national health IT agenda. The AHIC use cases “strive to provide enough detail and context for standards harmonization, architecture specification, certification consideration and detailed policy discussions,” and they seek to “describe involved stakeholders, information flows, issues and systems that apply to multiple organizations.”¹

The AHIC use cases are business use cases intended to describe the architecture and components of health IT efforts on the national level. Some of the cases completed by AHIC work groups apply to medical management, emergency response, consumer access to clinical information, quality reporting, and biosurveillance.

Work continues on others, including consultation and transfer of care; secure messaging with providers and remote device monitoring; and public health case reporting, immunizations and response management (outbreaks), and research supported by genomic and family history information.

Because the validity of use cases is dependent on the perspectives, needs, and interests of a variety of stakeholders, it is critical that those in the healthcare industry be prepared to evaluate and comment as work on AHIC and other industry use cases proceeds. Without a wide variety of perspectives from providers, consumers, and individuals, the use cases will not achieve their purpose.

Note

1. Department of Health and Human Services, Office of the National Coordinator for Health Information Technology. “AHIC 2008 ‘Prototype’ Use Case Stakeholder Overview.” September 20, 2007. Available online at www.hhs.gov/healthit/usecases.

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