HOW TO WRITE A SCENARIO

The below guidance facilitates the creation of a human-centered scenario with the narrative story focusing on a user's interactions with Health Information Technology (HIT), not on the technology itself. While elements of an effective User Interface (UI) may be relevant, scenarios should be as technology agnostic as possible, unless constraints exist on potential design solutions. Scenarios may be used for many different purposes, from testing a system to gathering requirements, but all should provide realistic details in a specific context of use. Scenarios can be very detailed or targeted depending on the purpose of use. To ensure a user-centered focus, a Subject Matter Expert (SME) as a representative user should be involved in the scenario development activity as early as possible. Reference the Glossary for definitions of bolded terms throughout this guide.

When beginning a conversation with users to discover their needs, the most common **scenarios** are preferred as an initial starting point, where alternatives and branches can be linked later. Scenarios generally focus on telling the story from an individual's perspective, although numerous **actors**, including **secondary actors**, may be involved. Scenario authors should focus on key points in the **clinical context**, being cautious to avoid over analyzing the **tasks** when variation does not introduce distinct **end-user** needs, **user goals** or system requirements. Scenarios have a starting point in a **triggering event** that begins the user's story.

Process Outline

The below steps outline the process of establishing a quality scenario.

1. **Scenario Purpose**: Start scenario development by determining how the scenario will be used: e.g., process improvement, discovery, design, task analysis, usability testing, etc.
2. **Actors**: Identify the individuals in the scenario, with at least a **primary actor** and the **subject of care** (**patient**) if applicable
3. **User Goals**: Determine what the primary actor is trying to accomplish in the scenario
4. **Triggering Event**: Define the **driver**, or event that starts the scenario
5. **Description**: Provide the clinical context and task details necessary for the goal(s) of the scenario from the perspective of the primary actor, optionally including thoughts and feelings
6. **Scenario Title**: Name the scenario with a unique and descriptive phrase, one generally associated with the user's goal

> *Not all elements to a scenario will be agreed upon by all SMEs, because of various experiences, different preferences, and separate environments of use— general agreement on a scenario is an ideal state.*

How to Get Started

In order to get started writing a scenario, the author must determine the purpose of the scenario. Preparation for scenario development includes gathering details of the context of use and initiating a conversation with the clinical SMEs, Business Owners/Sponsors, and usability team to ensure scope is defined and key objectives are agreed upon. Scenarios represent work, or the execution of tasks, within a particular context of use.

- Descriptions of the patient care situation and the context of use can represent:
  - Common situations as well as critical edge cases with patients' complex conditions,
  - A continuity of care perspective that crosses services by sequencing related scenarios.
- Descriptions of care provisioning, or the user's task execution can describe:
  - Common (and effective) practices, along with uncommon and challenging activities,
  - Decisions that need to be made and the relevant information needed,
  - Pain points in the user's experience, as well as opportunities for improvement,
  - Variation in task execution across sites and domains to distinguish unique requirements.

A user may consider the important aspects of their clinical work to be the frequent, complex or ambiguous work activities. The situations that present risk to patient care or safety, and the onerous aspects of clinical work, can provide a good starting point. Scenarios are not used to reflect all requirements, and a single scenario should not be used to represent all of a user's needs. It is imperative that scenarios be realistic, so multiple scenarios with various clinical contexts will likely be necessary to represent the broader collection of a user's needs.

This type of information collection may require various methods, including;

- User interviews
- Focus groups
- Questionnaires
- Literature consultations
- Observations
- Rapid-ethnographic studies

These methods provide detailed qualitative information for an informed decision-making process. Before any scenario is used to make decisions, real users should have the opportunity to confirm that the representation of the story is true. The below aspects of clinical work can be considered when prioritizing what type of scenarios should be developed next.

The initiation of scenario development can begin when a prioritized area of interested is established. Having current users author, or at least inform, the draft scenario description enables a rapid production of a realistic clinical context. A preliminary clinical review, prior to any confirmation activities, by a SME familiar with the role of the primary actor also increases the efficiency of collecting useful feedback from representative end-users. The iterative nature of feedback is only necessary to convey a realistic experience without significant contention amongst representative users, and where the identification of deviations to the typical scenario becomes infrequent.

The below worksheet, adapted from Reale, Anders & Weinger, 2016, provides a series of questions to help facilitate the discussion of what can be represented in a scenario.

Scenario Preparation Worksheet:
User: Which user group(s) are the primary users? What are their key characteristics?
User: What factors are unique to the primary actors' clinical specialty, service or environment?
Tasks: What are the critical tasks (high risk or high cost) performed?
Tasks: What are the common tasks (i.e., those that support use efficiency and effectiveness) performed?
Tasks: When are information needs especially challenging or the decision making especially difficult?
Tasks: When is information difficult to find; or more likely to be overlooked?
Tasks: When is clinical documentation especially challenging, duplicative or unnecessary?
Tasks: What could be automated or performed more cost effectively?
Workflow: What circumstances are particularly impactful (positively or negatively) to clinical workflow?
Workflow: What deviations or interruptions will users typically encounter?
Workflow: What situations require workarounds?
Workflow: What factors are related to seamless care delivery and care-team coordination?
Workflow: When are hand-offs most likely to fail?
Workflow: When is the goal of care especially complicated or ambiguous?
Workflow: When do priorities of care unexpectedly change?
Patient Safety: What aspects of the clinical task have the highest potential impact on patient safety?
Patient Safety: What aspects of the UI design pose the highest risk for patient safety-related errors?
Patient Safety: What aspects of the UI design pose the highest risk for use errors?
Satisfaction: What elements of the UI design are most important for user satisfaction?
Satisfaction: What circumstances are particularly impactful (positively or negatively) to patient-centered care?
Usability: What elements of the UI design or system functionality raise concerns for usability?

Table 1: Scenario Development Facilitation Questions

Approach to Scenarios

The structure of a scenario description can vary, but common elements present an easy to understand narrative. Using a consistent structure also enhances efficiency and eases the collection of user needs, while enabling the subsequent confirmation of identified requirements in an integrated manner. For this reason, the suggested **Scenario Template** is provided with this guide. The narrative's level of focus should align with the overall objective of the scenario development activity.

While scenarios may not include the most exhaustive description of specific tasks, additional facts can be linked to the scenario description by using a unique Identification (ID) number. Joining a scenario to a task flow diagram, business process model or the research that led to the scenario, can provide a valuable context to any HIT developer.

Glossary

Actor: A person, device, or system that plays a specified role in interacting with the solution (BABOK, 2016). Scenarios may have more than one actor, but must have a primary actor that is telling the story as a user of the HIT system.

Clinical Context: The variable situations in health care that influence the interpretation of health information (ISO/TS 13972, 2015).

End-User: A person who directly interacts with any system (BABOK, 2016).

Personas: The profiles of archetypal users' important behaviors and characteristics (Richter & Fluckiger, 2014). Personas are not real people, but are representatives of other users in their group. They are given a name, portrait, and potentially an interview to enhance the empathetic bridge between developers and users (Brown, Cook, Robbins, & Kabel, 2015).

Pre-conditions and **Post-conditions:** The terms that should be valid before or after, respectively, the scenario that is executed in order to be considered successful (IEC 62559-2, 2015). When the specific 'conditions' are captured and linked to a unique identification (ID) number, a further step-by-step analysis can be associated to the scenario.

Primary Actor: The person using the system(s) to achieve the goal (Cockburn, 2006) and generally the actor initiating the scenario.

Scenario: A story with realistic situations of End-Users interacting with a system or systems, including users' goals and tasks (UsabilityBOK.org, 2017).

Secondary Actors: Other persons, systems or devices that support the primary actor in achieving a goal (Cockburn, 2006).

Subject of Care: The person seeking to receive, receiving, or having received health care (ISO 13940, 2015). Also referred to as **Patient** or **Veteran**.

Tasks Sets of actions intended to accomplish functions (ISO 18435-1, 2009) to achieve the goal(s), but the specificity will depend on the purpose of the scenario. Tasks described in a scenario should focus on the needs of the user, and not the technology application (e.g., "create new medication order" vs. "*click* 'add new order' button ").

Triggering Event: An incident or condition causing the scenario to begin (IEC 62559-2, 2015), usually with the primary actor. Also referred to as a **Driver**.

User Goals: The desired outcomes a user has from using any system, which may relate to usability, usefulness and emotional impact, or the user experience (UX).

APPENDIX: SCENARIO TEMPLATE

<table>
<tr><td>Scenario Title</td><td colspan="2">Unique and descriptive phrase, one generally associated with the user's goal</td><td>ID#</td><td>XX</td></tr>
<tr><td>Actors</td><td colspan="4">Named person using the system(s) to achieve the goal (Primary); Other persons, systems or devices that support the primary actor (Secondary) [ideally linked to a persona]</td></tr>
<tr><td>User Goal</td><td colspan="4">Describe the user's goal so it can be understood by non-technical readers.</td></tr>
<tr><td>Triggering Event</td><td colspan="4">Underline the incident or condition causing the scenario to begin, while orienting the reader to a familiar setting in the workflow</td></tr>
<tr><td>Narrative</td><td colspan="2">Date Last Reviewed: xx/xx/xxxx</td><td colspan="2">Alternatives</td></tr>
<tr><td colspan="3">X

Sentence or bullet format.

Provide a brief background, including clinical context as necessary.

Provide enough details to meet the user's goal, ideally the writer of the scenario being representative of the primary actor's role.

Generally start with a typical path of success, but distinguish text where alternatives exist and use 'insert' 'bookmark', and add bookmark name that summarizes alternative.

Narrative is described from the perspective of the primary actor, flowing chronologically in a first, next… last manner.

Do not include technical specifications, only user needs.

Think about how the socio-technical systems (Clinical Content, Workflow/Communication, People, Internal Policies/Procedures/Culture, External Rules/Regulations/Pressures, Computer Hardware/Software, System Measurement/Monitoring, and Human-Computer Interface) impact the context of use.

When clinical details are pertinent, ensure clinical accuracy with a clinical review. Use footnotes for further clinical details[1].

Provide necessary environmental context details.

Optionally provide details related to the user's emotional experience, to emphasize high areas of interest, must have functionality or opportunities for improvement.</td><td colspan="2">• X
• Insert 'cross-reference' to bookmark > followed by text that briefly describes the alternative path.</td></tr>
</table>

[1] Utilize footnotes to describe clinical importance for non-clinical readers.