



ICT4D 3.0 approach

A Pragmatic Format for Use Cases and Requirements Description

Hans Akkermans & Anna Bon

In this 2-pager, a uniform format is presented to describe use cases according to the ICT4D 3.0 approach, used in this course. It was developed and validated, during extensive requirements engineering field research in rural West-Africa, (Mali, Burkina Faso and Ghana), from 2009 to 2015.

It thus follows a mixed-method approach, where both informal methods (short narratives, scenario scripts) are combined with semi-formal technical ones (UML diagrams). Namely, use case scenario descriptions and corresponding requirements analysis are ideally carried out such that:

- Their essentials are understandable by everyone, also by stakeholders outside the project.
- They provide a clear narrative for the future users (also people with no ICT background).
- At the same time they provide an information baseline that is useful for and can be gradually extended by technical developers (especially for the pilots technical specifications).
- They provide a simple, but shared information basis and reference point for all VOICES participants in different activity areas (e.g. work packages, WPs) and tasks, in a uniform format.
- They are compatible with architecture, system, and development international standards.
- Each use case scenario has a limited size and requires no more than a few work days to develop (e.g. 1 workshop/brainstorm meeting and 1 structured write-up, to achieve a first-cut version).

The set-up in 11 steps simple, and at the same time compatible with guidelines, standards, and requirement and IS development methodologies for development of information architectures.

0. Name

A characteristic, understandable, and distinctive label for each use case scenario.

1. Summary of key idea

What's the key (business) idea and why is it valuable or of interest to consider? (Short abstract)

2. Actors and goals

Who are the actors in the scenario and what are their role/responsibilities and goals? (Can be given in the simple form of a Table).

3. Context and scope

This can be described by answers to a checklist of questions such as:

- a. What is the layout or network configuration of the interactions between the parties involved in the scenario?
- b. Who are the (external) stakeholders and what are their concerns?
- c. What is the scope of the scenario (especially, what is outside it, not considered, system boundary)?
- d. What are success or performance measures for the scenario (especially in relation to what a pilot demonstration should be able to show)?

- e. What are important (pre)conditions that must be or are assumed to be satisfied for the scenario (context features, e.g. needed resources or infrastructure or other characteristics of the environment)?

4. Use case scenario script

The central storyline (just like in a movie, video clip storyboard, animation, or demo; the script might for example be given in the form of a Powerpoint or Flash animation showing the event-state chain of the actors' activities and interactions).

The main scenario is given in a well-structured narrative, e.g. through a limited number of steps (commonly 5-10), of the following type:

<actor1> <(inter)action> <actor2>.

Not all possible sub-scenarios, just the main and typical one is needed as a first step.

5. Interaction and communication

Further script information, e.g. in the form of a few UML sequence, state or activity diagrams. (This gives some info about dynamics, interaction and control flows).

6. Information concepts

Further script information, e.g. in the form of a few UML class diagrams showing the meaning of important concepts. (This gives some info on static data structures).

7. Technology infrastructure

What are the consequences of the above for technologies and technology components (Internet/Web, mobile, information, communication, voice services, both hardware and software) that must be (made) available in order for the scenario to work?

8. Cost considerations

What are estimated associated costs (operational, investment, development, in/outsource) for these technology infrastructure and components? Who carries these costs?

9. Feasibility and sustainability

Previous sections must be as factual as possible. This section is the start of assessment and judgment. The following checklist of questions needs answers:

- a. What is the technical feasibility of the scenario (e.g. [project] risk analysis, technical obstacles to overcome, system-level impacts)?
- b. What is the business and (socio-)economic feasibility and sustainability of the scenario?
- c. What are possible goal conflicts and dependencies in the collaboration between the actors in the scenario?
- d. Are there important general preconditions for the scenario to work, and is it sufficiently interoperable with the wider context both in a business process and a technical sense?

10. Key requirements

So-called MoSCoW list of requirements (Must have, Should have, Could have, Won't have) as a starting point for further architecture design, and system and component development.