

48433 Software Architecture

Tutorial 3 – Visualising behaviour with use-case maps

In this tutorial, you are learning to explore architectural behaviour through the application of visual techniques, namely use-case maps. You are also practising how to reason about your architectural decisions and provide clear explanations and description.

1. Use-case maps

From your usage narratives, you will extract key events. These events trigger use-case maps. These events should be derived from user activity, internal system activity or other external sources.

You will then draw a use-case map for each event on your conceptual architecture diagram.

1. Underline key events on your narrative(s).
2. Make a fresh drawing of your conceptual architecture diagram.
3. Take one event and construct a use-case map for that event on the conceptual architecture diagram by drawing a trace line through each component you think should participate in the activity. Make sure you
 - a. Label the event on the diagram
 - b. For each component that the trace crosses, label the name of the responsibility that is exercised.
4. Reflect on the use-case map you have just produced
 - a. What did it tell you about the behaviour of the architecture?
 - b. Did it expose missing components, connections or responsibilities?
 - c. Do you need to split or add components?
 - d. Did it help clarify responsibilities?
5. Re-factor the conceptual architecture, based on your reflections.
6. Elaborate the description of the use-case map, by adding informative comments about the component responsibilities exercised by the trace.
7. Repeat this procedure for the remaining events.
8. Walk through one of your use-case maps on the board to the whole class. The rest of the class is encouraged to question and comment on your artefact.

Note: Some people find it helpful to do design work with index cards (as exemplified in the Agile approach). You may like to write each usage narrative on an index card, and highlight the events in each narrative. Whenever you are working with events, you can easily look up the event and the context of that event, as given in the narrative.

For next time

Explore the non-runtime quality attributes, MeTRiCS by extending your application of use-case maps to lifecycle events.