

Views on Requirements Frameworks: Working Group Status 2023

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Summary. This article reports some of the latest results of the working group *Software Requirements Frameworks (REFrame)* within the German Computer Society (*Gesellschaft für Informatik, GI*). It focuses on perspectives on requirements frameworks and their characteristics. While the group continues to conduct further investigations, these results shall provide a foundation for a systematic structuring of requirements engineering (RE) methods and techniques. They are intended to serve both research and practice, for instance, by structuring research efforts and guiding access to advanced engineering practices.

Objectives and Activities of the Working Group

The working group *Software Requirements Frameworks* investigates conceptual and methodological frameworks that structure requirements engineering (RE), represent its current state of knowledge, and provide practical guidelines for RE. The working group is part of the special interest group *Requirements Engineering* of the *German Computer Society (Gesellschaft für Informatik)*.

The main objectives and motivations of the working group are:

- Expand our understanding of RE
- Obtain practical assistance for RE
- Support training and further education in RE
- Receive input for the further development of RE

In the current work period, which started in the second half of 2022, the group has seven core members who meet regularly. They have chosen two main focus topics:

- Further extend and advance the definition and analysis of the *framework* concept
- Specifically investigate *requirements elicitation* frameworks

In order to investigate these topics, the working group has performed various activities:

- Organization of the 1st International Workshop on RE Frameworks (REFrame 1/2023) [1][2][3] with special focus on “Human Values”, collocated with the REFSQ 2023 conference, in April 2023, in Barcelona, Spain.
- Organization of the 2nd International Workshop on RE Frameworks (REFrame 2/2023) [4][5] with focus on “REframing Elicitation” collocated with the International IEEE RE Conference 2023, in September 2023, in Hannover, Germany.

- The launching of the website REFrame-community.org [6] as hub for the emerging community activities, and as a platform for the dissemination of results
- A total of 14 working group web-meetings between July 2022 and July 2023
- The start of an extended work mode with smaller teams that address specific subtopics and feed back their results into the overall working group

These measures also serve the purpose to attract more people to the working group and to further extend the ongoing activities.

The following sections provide some insights into results that the working group has achieved during the aforementioned activities and discussions. In particular, they present the main findings and positions concerning the framework concept achieved so far. The topic is still the subject of continued investigations. Nevertheless, the currently available results might already serve as a useful first foundation for systematically structuring RE methods and techniques.

Framework Definition

In the context of requirements engineering, and in software engineering in general, the concept of a methodological framework is used very frequently (cf. [7][8][9][10][11][12]). However, a systematic and generally accepted definition is lacking. For instance, the IREB Glossary [13] contains definitions for Process, Method, and Technique but not for Framework.

The working group has discussed the framework concept and its terminology definition repeatedly. In particular, at the REFrame 1/2023 workshop [1], an extensive discussion took place with a larger group of requirements experts. Based on the discussions, literature reviews and working sessions the group came up with an updated definition (compared to [14]):

A framework is a conceptual structure, skeleton, or architecture that offers guidance that can be adopted for discussion, reasoning, problem-solving, or decision-making.

Interactive Discussion Session

At the annual meeting of the GI’s special interest group on *Requirements Engineering*, the working group conducted an interactive session with all meeting participants. The objective was to elicit and discuss the participants’ views on requirements frameworks

respectively to validate the definition stated above. The following key questions were addressed:

- What is a requirements framework?
- What are the important characteristics of requirements frameworks?
- How can we utilize the concept of requirements framework for the benefit of RE research activities?
- How can we apply requirements frameworks for enhanced guidance of RE practice?

The questions were first discussed and elaborated in small breakout sessions. Then a plenary session collected the rich spectrum of results, starting with the two questions:

- What do you associate with a requirements framework?
- What are the characteristics of a requirements framework?

Many contributions during the discussion contrasted the framework concept with other methodological elements: in particular *method*, but also *model*, *procedure*, and *guideline*. Two quite illustrative statements were: “Framework is more than method, more abstract” and “system of methods”. These nicely express the need for a framework concept at least in the realm of method engineering.

Several other contributions expressed a need for frameworks to guide practical guidance in requirements engineering. This is in line with other efforts of the working group to collect a compendium of relevant requirements engineering methods and techniques. The compendium shall provide practitioners with orientation, advice, and experience-based, ready-to-use procedures and tools.

Following the interactive session, the topic of requirements frameworks was raised a few times during the special interest group’s annual meeting. For instance, meeting presentations that referred to specific methods or frameworks were related to the previously collected characteristics of frameworks. This way, the working group received very valuable input throughout the meeting, and hopefully could also provide useful new ideas to the other meeting participants.

Conclusion and Outlook

In the period between mid 2022 and late 2023, the working group *Software Requirements Frameworks (REFrame)* has reached important milestones, notably two workshops at major RE conferences, the launch of a community website, and advances in both clarification of terminology and characterization of relevant requirements engineering frameworks.

The decision to work in smaller teams on selected topics in parallel, in addition to the established web meetings of the entire group, promises to provide additional momentum. For instance, new results on requirements elicitation frameworks are currently being developed and shall be made available in 2024.

The working group is open to additional participants. Persons interested can contact the group via its website

on <https://ak-reqframe.gi.de/> or join future community events that will be announced on the <https://reframe-community.org> website.

Literature References

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