

Domain adaptation for RE training – Experience report

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Abstract

Professional Requirements Engineering (RE) training addresses general terminology and methodology for RE. Even though several training providers offer some training adjustments to a company, the expectation is that participants can transfer learning content into their domain and work context. Our experiences indicate difficulties in carrying out this transfer. We have set up domain-specific training focusing on connecting domain context and professional RE training material to address this challenge. This experience report outlines the concept we use in intralogistics.

Keywords

Requirements engineering, training, industry adaptation

1. Domain adaptation

We observed challenges in transferring generic RE concepts and methods to the intralogistics work context. To support knowledge transfer from professional IREB training to our work context, we have based our syllabus on the IREB foundation level syllabus [1] and connected IREB content to our domain context. The training is customized to different target audiences.

We present outlines from our young professional training, an in-person 16-hour RE-overview training for up to 45 participants. The training combines deductive and inductive methods, including group work and business games, by addressing (1) RE concepts, (2) best practices, and (3) a case simulation. Similar to the IREB setup but with a different focus, our syllabus introduces RE, RE roles, types of requirements, principles, stakeholders, RE process, elicitation, and documentation (compare [1]). A significant difference is the creation of awareness for real-life challenges using constructive discomfort. This requires a safe learning environment that supports reflecting and balancing challenges, failures, and success.

RE concepts and methods - To address general RE concepts and methods, we start per topic with (1) a motivation based on a domain examples or domain challenge, followed by (2) the generic concept, including a link to the intralogistics domain, and close with (3) an isolated domain specific exercise to support applicability and to create confidence in using the approach.

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Best practices for RE use cases - Based on our company's RE processes, we isolated three high-level use cases: (A) RE in sales, (B) RE in customer projects, and (C) RE for future products and product optimization. Our training material provides for each of these use cases (1) an introduction, (2) a reflection on challenges and risks, and (3) best practice recommendations for elicitation techniques and documentation styles. Table 1 shows an extract of these data.

Table 1

Excerpts of use case specifics in the intralogistics context

	RE in sales	RE in projects	RE for products
Challenges	<ul style="list-style-type: none"> • Bidding process • Vague req. • No payment • Domain knowledge 	<ul style="list-style-type: none"> • Multi-component solution • Dependencies • Changes 	<ul style="list-style-type: none"> • Predict the future • No real customer • Dependencies
Best practices	<ul style="list-style-type: none"> • Checklists • Process models • Interviews 	<ul style="list-style-type: none"> • Process models • Textual req. • Focus groups 	<ul style="list-style-type: none"> • Creativity techniques • Persona

Case simulation – We use 4 hours of training for a gamified case simulation, in which the participants compete in small groups to execute RE in a mockup project, to experience and overcome challenges, and to present their deliverables. The participants receive a mockup call for tenders from a meal-kit delivery company, the invite to visit the (mockup) warehouse, and the invite to discuss details. We guide the participants with minimal expected deliverables and create an open and safe space where they can apply and test RE methods. The minimal expected deliverables are a process model, a project overview, prepared material for elicitation meetings, elicitation method selection, documented requirements, and a presentation.

2. Evaluation and conclusion

Evaluation – We executed this training in 2022 and 2023 in international groups (18 and 40 participants). In 2022, all participants had a software background, while in 2023, a multidisciplinary group (software, mechatronic, sales, marketing) participated. The participants valued the "application of knowledge" and indicated that our training "shows the usefulness and importance of RE." In 2022, the feedback about applicability was most optimistic, while in 2023, some participants highlighted missing applicability to their work context. In total, 67% of the 2023 participants rated the training as a valuable use of time.

Summary – Our training material connects IREB RE concepts and methods to the context of intralogistic automation. The deliverables provided during the case simulation and the collected feedback show a slight tendency for this approach to support applicability. We also see struggles with our current training concept, some related to applicability. As our current data are not representative, we can only assume that this might be related to the diversity of the 2023 trainee group, and we recommend further investigating this aspect.

References

- [1] S. Bühne, M. Glinz, H. van Loenhoud, S. Staal. Certified Professional for Requirements Engineering - Foundation Level. Version 3.1.1. <https://www.ireb.org/de/downloads/#cpre-foundation-level-syllabus-3-0>. Last visited Feb. 2024