

# Industry needs in Requirements Engineering

## XXI century challenges for an IT curricula

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**Abstract** —The Requirements Engineering (RE) community must be prepared for XXI century challenges, such as Industry 4.0. Considering this, we collect the requirements engineering needs and challenges indicated by ten enterprises that operate in the Portuguese information technology (IT) market. We aim to bring to the wider IT academic community, awareness of the challenges the industry is confronted with in the area of RE, to inform IT engineering curricula, and foster industry-academia cooperation. These needs and challenges were collected in a workshop (<http://re2017.org/pages/conference/rept/>) that brought together academia and industry members of the Portuguese community.

The main challenges faced by IT industry nowadays are: (1) dealing with legal requirements - volatility, variability, lack of clarity, large quantity, and the new privacy requirements imposed by the European legislation; (2) the need for new techniques to deal with high volume of requirements, and the innovative nature of requirements (flexible, and non-consolidated requirements, including new tools that leverage reusable and combinable cognitive elements); (3) the lack or incompleteness of the requirements, often described by customers at a high level of abstraction/low level of detail with poor quality description. Some other challenges are related with the lack of courses in requirements engineering, lack of knowledge transfer between academia and industry, or knowledge areas where more work is needed; (4) university graduates presenting an insufficient level of expertise in RE; (5) difficulty in the relation with customers when using an agile paradigm in the RE activities; (6) the difficulty in contractualization of quality requirements (known as non-functional requirements) (7) needing more knowledge on how to adapt RE processes, proposed by academia, to specific development and customer contexts; (8) needing more knowledge on the identification of the most adequate set of tools to support the whole development life-cycle, including the requirements collection and definition; (9) the lack of tools to support (requirements) traceability

over the entire lifecycle. Another difficulty reported was (10) the lack of support, from senior corporate management, of innovative projects to search solutions for the needs/challenges encountered in the RE area. This fact indicates a lack of awareness by senior managers of the cruciality of RE and its impact in quality.

The importance of RE was very well underlined by Sarah Gregory (Intel Corporation), the keynote speaker of the workshop: “Requirements Engineering is a practice that seeks to bring certainty and clarity to product definition, design, and development efforts. Engineers and executives want to know that we’re going after the right market, designing the correct product, and meeting all of the requirements that are needed to bring about success.” This acute awareness of the critical role of RE was very well demonstrated by the good adherence of the IT industry to this “academia meets industry” event in the specific subject of RE. This is a sign of the maturity of the IT Portuguese industry, which we are very happy, and proud, to testify. Let’s work together to edify IT engineers to leverage sound RE practices to cope with the challenges to successful IT product development.

**Keywords** — *curricula; computing; software engineering; requirements engineering; academia industry relation.*

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