Table. Requirements Smells identified in the Primary Studies.

No.	Smell Name	Definition	Detection Mechanism	Examples	Ref.
1	Subjective Language	Def1: These are words whose semantics are not objectively defined as: easy to use and profitable (A1). Def2: These are words whose semantics are not objectively defined (A2, A4, A7). Terms: user friendly, easy to use, economical, acceptable, optimized, profitable (A2, A4, A7).	Dictionary (A1, A2, A4) NLP (A5)	Ex1: Both architecture and programming must ensure simple and efficient maintainability (A1, A7).	A1, A2, A3, A4, A5, A7, A8
2	Ambiguous Adverbs and Adjectives	Def1: Refers to certain adverbs and adjectives that are unspecific in nature, such as: almost always, significant and minimum (A1). Def2: These are adverbs and adjectives that are non-specific (A2, A4). 3Def: They are unspecific words that cause imprecision, inconsistency, uncertainty in understanding requirements, which may lead to contradictory interpretations (A7). Terms: almost always, minimum, very much, as long as necessary (A2, A4, A7).	Dictionary (A1, A2, A4) NLP (A5)	Ex1: If the quality (...) is too low, a fault must be recorded in the error memory (A1, A7). Ex2: The module must be updated periodically the data (A7).	A1, A2, A3, A4, A5, A7, A8
3	Loopholes	Def1: Refers to phrases expressing that the following requirement must be fulfilled only to a certain vaguely defined extent (A1, A4). Def2: These are words that allow interested parties to ignore the specifications (A2, A7). Terms: if possible, as appropriate (A2, A4, A7).	Dictionary (A1, A2, A4)	Ex1: As far as possible, the entries should be verified (A1, A7).	A1, A2, A3, A4, A5, A7, A8
4	Open-ended, Non-verifiable terms	Def1: They are difficult to verify because they offer a variety of possibilities (A1, A2, A4).	Dictionary (A1, A2, A4)	Ex1: The system can only be activated if all required sensors work with	A1, A2, A3, A4, A5,

		Def2: These words are difficult to verify because they offer a variety of possibilities for running the system (A7). Terms: provide support, at a minimum (A2, A4).		sufficient measuring accuracy (A1, A7). Ex2: The response times will be defined depending on the operation performed (A7).	A7, A8
5	Superlatives	Def1: Refers to requirements that express a relationship of the system with all other systems (A1, A2, A4). Def2: These are adverbs and adjectives, where the requirements express a relationship of the system with all other systems (A7). Terms: best performance, shortest response time (A2, A4, A7).	Morphological analysis or POS tagging (A1, A2, A4) NLP (A5)	Ex1: The system must implement the maximum resolution for the figures (A1, A7).	A1, A2, A3, A4, A5, A7, A8
6	Comparative Phrases	Def1: They are used in requirements that express a relationship of the system with other specific systems or previous situations (A1, A2, A4). Def2: They are adverbs and adjectives, where the requirements express a relationship of the system with other systems or previous situations (A7). Terms: better than, greater than, less than (A2, A4, A7).	Morphological analysis or POS tagging (A1, A2, A4) NLP (A5)	Ex1: The screen (...) contains the fields A, B and C, as well as more accurate compilation information (A1). Ex2: The new reports must be more accurate than the current ones (A7).	A1, A2, A3, A4, A5, A7, A8
7	Negative Statements	Def1: These are "statements of system capability that will not be provided" (ISO, IEC and IEEE, 2011). Some argue that negative statements can lead to underspecification, such as a lack of explanation of the system reaction in such a case (A1). Def2: These are descriptions of what the system should not provide (A2, A4, A7). Thus, explanations of what the behavior of the system should be in such cases (A7).	Dictionary (A1, A2, A4). POS tagging (A1, A4)	Ex1: The system should not terminate users due to waiting times (A1, A7). Ex2: System must not accept VISA credit cards (A2, A4, A7).	A1, A2, A3, A4, A5, A7, A8

8	Vague pronouns	Def1: They are unclear relations of a pronoun (A1, A2, A4, A7). Terms: which, yours, certain, several, all (A7).	POS tagging: Pronoun substitution (A1, A2, A4) NLP (A5)	Ex1: The software must implement services for applications, which must communicate with controller applications implemented in other controllers (A1, A7). Ex2: Analysts must interview customers before their vacations (A7).	A1, A2, A3, A4, A5, A7, A8
9	Incomplete references	Def1: References that a reader cannot follow (A1, A2, A7).	Not part of the scope of the study (A1, A2)	Ex1: "Unknown white paper". Peter Miller (A1, A2, A7).	A1, A2, A3, A5, A7, A8
10	Say 'how', not 'what'.	N/A	N/A	N/A	A3
11	No documentation of the assumptions and their validation	N/A	N/A	N/A	A3
12	Passive voice without naming the agent	N/A	N/A	Ex1: When the contract is closed, the notification is sent (A6).	A6, A8
13	Duplicated functionalities	Def1: Repeating descriptions of the same interactions between systems and actors in different use case specifications (A8)	Clone detection (A26)	N/A	A8, A26
14	Completeness	Def1: A specification is complete if all relevant requirements are present and each requirement is fully developed (A20).	Dictionaries, regular expressions, string similarity, etc., NLP and petri-nets (A20)	Ex1: We need to include attributes such as First Name, Last Name, Address, etc (A10). Ex2: Customer selects the account (A20).	A10, A20
15	Consistency	Def1: A specification is consistent when two or more requirements do not conflict with each other or with the governing specifications and objectives (A20).	Dictionaries, regular expressions, string similarity, etc., NLP and petri-nets (A20)	N/A	A20

Abbreviations: Number (No.), Definition (Def), Requirement Example which represents the Smell (Ex), Studies that make the proposal (Ref.), Not applicable (N/A).