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AUTHOR:
Alexander Mappes (Fraunhofer)

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INTERNAL REVIEWERS:
Seppo Heikkinen (NIXU), Romana Sachova (Caixa Bank), Mikko Larikka (NIXU)

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EXECUTIVE SUMMARY

The EU-SEC Consortium is developing a framework that innovates the existing compliance and assurance landscape by creating and testing a multiparty recognition approach between existing cloud security certification and attestation schemes, and a continuous auditing based certification scheme. Methods and tools developed in the EU-SEC work packages WP2 and WP3 should be fit for purpose. In order to evaluate the fitness, the Technology Readiness Assessment method has been developed, in order to objectively assess the Technology Readiness Level (TRL) of the tools, components and processes used in EU-SEC, further called the EU-SEC solution.

This document provides an overview of generic benchmarks for each TRL from 1 to 9. These benchmarks may be used as an objective guideline and framework for assessing the level of maturity for the individual EU-SEC solution components. The TRL's of the individual components involved in the EU-SEC according to the outlined approach are reported in the EU-SEC Innovation Management Plan (D7.2).

The guiding principle is to provide an objective framework for assessing the technological maturity of the EU-SEC solution.

The TRL assessment also results in an innovation management plan, which facilitates further development of the EU-SEC solution as well as its individual components (see D7.2 EU-SEC Innovation Management Plan).

ABBREVIATIONS

ESA	European Space Agency
IRL	Investment Readiness Level
KPI	Key Performance Indicator
MRL	Market Readiness Level: A theoretical construct / measure describing the effort made, to exploit a technology economically.
NASA	National Aeronautics and Space Administration
TRL	Technology Readiness Level: A theoretical construct / measure used to make the maturity of a technology comprehensible and comparable to other technologies.
TRA	Technology Readiness Assessment: The process of assigning a specific TRL to a technology.
R&D	Research and Development

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1 INTRODUCTION

In order to monitor and validate the level of maturity of each single component of the EU-SEC solution a structured approach will be defined. On the one hand, this approach sets a framework for assessing the current state of the Technology Readiness Level (TRL) of each individual component of the EU-SEC solution, and on the other hand, it helps to derive an action plan for refining each component's technical maturity level, which will be implemented in the project's innovation management plan (D7.2). The different TRLs serve as theoretical constructs used to make the maturity level of a technology or innovation easily accessible. This makes them comparable to the maturity level of similar or even different technologies. At the end of the project, the single components of the EU-SEC solution should at least have reached a level of maturity that is comparable to a prototype working in the intended operational environment, which represents a TRL of 7+ (improved prototype state and above, see chapter 4). In order to achieve the planned TRL 7+ for each single component in the EU-SEC solution in a step-wise manner, EU-SEC applies a Technology Readiness Assessment (TRA) methodology, which is based on methodologies developed by the European Space Agency (ESA) [1] and by the National Aeronautics and Space Administration (NASA) [2][3] for software components specifically. The main goal of this validation approach is to show the effectiveness of the developed solutions in the real-world pilots, through an objective assessment of the achieved TRL.

Another goal of the TRA is to evaluate the new TRL of the EU-SEC solution components after each project validation cycle of the development process. This will allow the developers of different requirements and demonstrators to take corrective actions in case there are deviations with respect to the pursued TRL. The TRA reports generated by this approach will provide systematic feedback in the form of directives or guidelines for further improvement and better alignment to the project's overall goals (see D7.2. EU-SEC EU-SEC Innovation Management Plan).

In accordance with the goal of a possible economic exploitation of the individual components constructing the EU-SEC solution, the Market Readiness Level (MRL) of each of the components will be taken into account here as well. Due to sparse regimentation concerning a scientific methodology assessing the MRL, we will orientate to the Investment Readiness Level (IRL) by Steve Blank [4] and to a methodology used in the Fraunhofer exploitation practice.

Therefore, the following section starts with a description of the TRA approach in general. The next section provides an overview of generic benchmarks for each TRL from 1 to 9. These benchmarks can be used as an objective guideline for assessing the level of maturity for the individual components, tools and processes of the EU-SEC solution.

2 TECHNOLOGY READINESS ASSESSMENT (TRA) METHODOLOGY

The range from the lowest to the highest TRL reflects several distinguishable maturity levels reaching from a plain theoretical description of the technology (TRL1), to the state of flawless functionality in the actual operational environment of the technology (TRL9). Herein, TRLs serve as theoretical constructs being used to make the maturity level of a specific technology easily accessible and comparable to the maturity level of similar or different technologies, being utilized in the same - or a comparable - context. The umbrella term TRL thus refers to a set of criteria that enables a consistent and objective assessment of a technology's maturity level. Referring to the ESA, these criteria can further be categorized in the following four areas:

- A description of the research and development, which has been conducted concerning the technology. If applicable, a further and detailed description of a technology's subparts should be presented.

- A definition of the requirements concerning the functionality of the technology. The description of the requirements should cover all the relevant criteria concerning the intended application of the technology.

- The environment in which the verification of the technology's functionality has taken place, needs to be defined. Furthermore, the environment, where verification is currently taking place, has to be compared against the intended and ultimate environment, in which the technology will finally have to operate.

- The technology's present and future viability. This means the degree to which the technology can still be developed further. If so, the technical risk and effort needed to do so, needs to be communicated in a realistic manner.

In order to reach an advanced TRL, a technology has to fulfill specific benchmarks in each of the four areas just mentioned. Although these specific benchmarks per area differ from one TRL to the other (see Generic Description of TRL 1 to 9), a general flow diagram (see Figure 1) can be used to illustrate the TRA process in terms of the general assessment of those criteria-areas and the empirically observable and guided step-wise maturation of a technology.

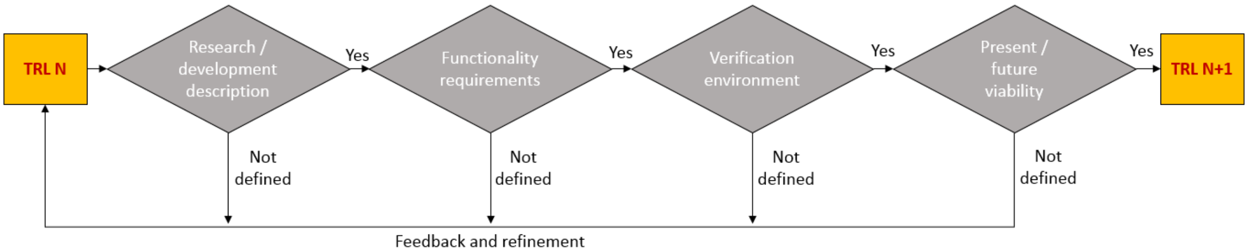

Figure 1: EU-SEC's Technology Readiness Assessment (TRA) steps

Using specific Key Performance Indicators (KPIs) for the criteria of each of the four areas, the particular TRL of a technology can be classified and validated objectively. The following chapter (Generic Description of TRL 1 to 9) defines these specific benchmarks per criteria-area for each TRL from 1 to 9. Hereby, the approach for an objective TRA is created, which will be used in the EU-SEC Innovation Management Plan (D7.2) to assign each component of the EU-SEC solution to a particular TRL.

Regarding the potential exploitation of a technology, however, for each TRL, some economically relevant factors and actions need to be considered as well. The aim of this is to ensure, that the maturity level of a technology is not only driven by technological deliberation but also by economic factors, like, for example, the market potential, licensing issues or a technology's actual value proposition. Often enough, technological innovations do not incorporate economic considerations early enough. In the worst case, this can lead to the development of an expensive and comprehensive technology, which nevertheless can only hardly be exploited, as its development was conducted without bearing the market or its final use in mind. Hence, to ensure an innovation plan, which does not neglect the economic factors needed to exploit the EU-SEC solution, we will provide relevant economic criteria for each TRL, which have to be met in order to reach an MRL status that is complementary to the maturity of the technology as expressed by TRL. Therefore, for each TRL we will define several economic key criteria, which a technology has to meet, to reach the corresponding MRL. These economic criteria are adapted from the Investment Readiness Level (IRL) of Steve Blank [4]. The IRL methodology was developed, to provide investors with a metric driven guideline, how to assess the progress of a potentially sponsored startup. Additionally to the IRL, we will use criteria of a methodology based on the profound R&D experience of the *Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung*. This approach attempts to interrelate specific steps in the technological maturation of a product with the corresponding economic endeavors in order to facilitate a comprehensive and efficient overall development of a technology. Therefore, additionally to the generic description of different TRLs, the following provides MRL benchmarks for each TRL from 1 to 9 in addition to the benchmarks for the four TRL relevant criteria-areas.

3 GENERIC DESCRIPTION OF TRL 1 TO 9

This section provides a definition of different benchmarks, which a technology has to meet in order to be assigned to a specific TRL. To ensure a structural and standardized TRA, these benchmarks will be grouped in the four areas outlined in the previous section (description, requirements, verification and viability). This is done to illuminate KPIs, which should be used to determine a technology's maturity from TRL 1 to 9. As mentioned before, the outlined methodology concerning the mere technological readiness of the components is based on a combination of the guidelines provided by the ESA and the NASA.

3.1 TRL 1

At this stage, a detailed theoretic description of the technology, its basic principles and functionality is presented. Therefore, scientific evidence or knowledge should be generated, to underline the features and key characteristics of the technology.

Description: A definition of the underlying theoretical principles is provided. The concept and conceived functionality are scientifically sound or verified by domain experts.

Requirement: Calculations or empirical evidence predict the needed capacity or capability of the technology.

Verification: An analytical or theoretical based verification of the functionality is sufficient. Experimental work or publications concerning the principles of a technology serve as a proof.

Viability: At this point, statements about the viability are limited to the theoretical framework and empirical evidence. As this is a rather abstract or hypothetical state of the technology, a potential viability can be only be estimated by comparing the prognostic potential of a technology to prognostic efforts and risks of developing it.

MRL: Formulation of first broad hypothesis concerning a potential business model and different value propositions regarding potential users / customers are generated. Considerations include questions like: Which problems are users trying to solve with the technology? What are the main benefits deriving from the usage of the new technology?

3.2 TRL 2

At TRL 2, the focus shifts from a rather theoretic and abstract point of view to a more application oriented one. The application or use cases defined in TRL 2 are still rather hypothetical but should, nevertheless, be defined and structured well enough to make the working mechanisms and principles of the technology's application comprehensible.

Description: The intended application or concept of the solution should be provided. Single working mechanisms are outlined and their interaction principles are hypothetically described. Furthermore, a description of the empirical evidence or scientific publications are presented, proving the theoretical framework on which the application is based (as outlined during TRL 1).

Requirement: The specific functionality required for the application's purpose is outlined. If applicable, relevant algorithms are defined and the basic principles are coded.

Verification: Analytical or experimental proof of the use case is provided. Ideally, synthetic data is used to test the basic elements of the application and their functionality. Most examples, however, emerge from analytical studies about the application of the technology.

Viability: Identification of the tangible requirements needed to realize the hypothetic application are presented. Is there a realistic chance of implementing the application? Who would be involved in this process? How much work has to be spend to achieve the intended solution?

MRL: Concerning the concept readiness, several application-scenarios should be thought of. Furthermore, first attempts should be made to outline a potential target group and first interviews with potential customers need to be conducted in order to identify the actual problems the customer is trying to solve with the application. Regarding intellectual property, the current technological state concerning the specific application needs to be researched.

3.3 TRL 3

At this stage, the developmental activities are pointing into a more practical direction. Hypothetical and speculative application-scenarios are individually tested and transformed into action plans involving different stakeholders of the technology such as R&D. Non-integrated subsystems and ideally single components of the technology are tested and validated in laboratory and analytical studies, which leads to a proof of concept of the critical functionalities.

Description: The essential characteristics and single units / components of the technology are defined in detail. A theoretic interoperability of the single elements is conceptualized theoretically. Parameters, which are needed to test the hypothesis stated in TRL 2 are set and defined sufficiently.

Requirement: On the one hand, the requirements of similar technological applications are defined precisely, based on analytical research or comparable experiments. On the other hand, the requirements for the functionality of each single component making up the technology as a whole should be validated.

Verification: From TRL 3 onwards the environment of verification moves beyond the theoretical, mainly hypothetical phase: the analytical predictions stated in earlier phases are now validated in small scale laboratory settings. The proof of concept for different components of the technology is realized through experimental studies with simulated data and modelled scenarios.

Viability: Statements about the viability depend on the results of the proof of concept of the single component's functionality. Nevertheless, an estimation should involve the further effort needed to reach the single component's intended functionality, the effort of building a framework warranting interoperability of the single components and the actual potential of further developing the technology (e.g. an estimation of the degree to which the technology will be able to meet the hypothetical functionality).

MRL: Regarding the concept readiness, a market research concerning potential competitors in the aspired field needs to be conducted and investigations on potential markets, as well as their sizes should be undertaken. On the dimension of customer interaction, at this stage, different possible solutions for the problems, which the target customers are facing, should be explored during customer interviews. With reference to the intellectual property, patents or registered designs, which are possibly already existing, have to be identified to avoid potential legal issues.

3.4 TRL 4

A first integration of the single components is implemented at this stage. Parts of the system - or the system as a whole - are tested in small scale tests and basic simulations. Compared to the eventual operation environment, the testing environment used in this phase is rather extenuated and simple. TRL 4 can be seen as the first step from experimental research to practical engineering.

Description: A first attempt is done to define the architecture of the system or the complete integration of the single components. Results of the first low fidelity experiments of the system as a whole need to be reported. Further, an estimation should be given, how these results might translate into the system's performance in "real-life" scenarios and the eventual operation environment, respectively.

Requirement: Additionally to the requirements of the single components of the technology (as defined during TRL 3), in this phase, the required functionalities of the system as a whole need to be defined. Furthermore, the requirements of the components' interfaces need to be described to ensure their flawless interoperability.

Verification: As in TRL 3 the testing environment is orientated to a practical rather than theoretical or hypothetical verification environment. At this stage, however, the system as a whole or groups of interoperating single components are tested in small scale lab studies with simulated data. This can be seen as the first phase of actual experiments on the systems functionality.

Viability: Possible challenges concerning the interoperability of the subparts have to be identified and communicated. Furthermore, an estimation should be given of the effort needed to improve or create an architecture ensuring the interoperability and the required functionality of the system as a whole.

MRL: Regarding the concept readiness, first attempts concerning a potential business model should be made. These should involve a definition of the (most potential) value proposition, the added value for the customer, strategic partners and resources needed, possible communication or marketing channels, potential sources of income, the key activities, cost structure, relationship to the customer and targeted customer segments. Furthermore, regarding the customer interaction level, exact and realistic product requirements need to be explored. The intellectual property should be protected by an invention disclosure; possible gaps in the patent portfolio need to be analyzed and closed if necessary. If applicable, members of the development team have to be identified, who consider forming an independent company or entity based on the technology.

3.5 TRL 5

The developmental step from TRL 4 to TRL 5 represents an increase of reliability and validity concerning the test environment and the application of the functionality of the system as a whole. Now the subparts and basic components are being integrated in such a manner, that the configuration of the system is comparable to the eventual operating environment and "real-life" application in nearly all aspects.

Description: Here the focus lies on the description of the full technology and its interaction with the environment. Evidence used to describe the system's functionality is based on laboratory scale tests with a high fidelity in a realistically simulated environment. The simulation should cover relevant aspects and parameters of the eventual operation environment in a realistic manner. Additionally to the results of these tests, the differences between the simulated application and the eventual operations needs to be analyzed to further support the functionality's evidence.

Requirement: The requirements of the system as whole should be defined specifically and in dependence of the operating scenario. Parameters which – according to the tests - seem to impact the technology's functionality at most, need to be identified. Furthermore, the requirements needed to interface the technology to existing end-to-end software elements should be described in detail. If applicable, this concerns both, internal and external interfaces.

Verification: A relevant scenario is used to verify the functionality. As mentioned above, the conditions of the testing environment should be as close as possible to the conditions in the eventual operating environment. Although the testing scenario is in a laboratory scale, the simulated data used should be highly viable in order to simulate different eventual operating scenarios.

Viability: An analysis concerning potential deviations between the functionality of the system in the test environment versus the functionality of the system in the eventual operating environment has to be conducted. This analysis should orientate on the congruency between the laboratory and "real-life" environment for each of the simulated parameters. Based on these analyses the developmental effort needed to close this potential gap is estimated.

MRL: In terms of the concept readiness, a first financial plan should be outlined. This involves calculations regarding personnel, material and other financial requirements needed to a) build a prototype, b) create pilot series and c) finalize the product. The customer interaction at this stage should focus on the validation of the technology's specifications. Finally, concerning the intellectual property a trademark strategy should be determined. Aspects of interest are: should the trademark rights be kept or sold, is an international registration necessary, are brands or trademarks needed to be registered, are there sufficient resources for the trademark strategy.

3.6 TRL 6

The focus at this stage shifts from verifying a laboratory scale functionality to a prototypical one. Therefore, at TRL 6 an actual prototype needs to be created and tested. All the functionalities attributed to the eventual final operating system should be realized in the prototype, in order to validate the minimal viability of the system.

Description: Details concerning the technical and systematical development of the prototype need to be outlined. The functionality of the prototype is compared to the laboratory scale tests of the earlier developmental phase. The advancement and learnings compared to the technology's performance at TRL 5 need to be listed to warrant that these aspects have been taken into account in the development of the prototype.

Requirement: Requirements of the system as a whole are adapted to the prototype. In dependence of the prototype's performance, these requirements need to be further specified and fine-tuned to relevant parameters determining the intended operational functionality. If applicable, the difference between the laboratory scale functionality of the system and the prototype's functionality needs to be explored.

Verification: Here again, the conditions of the testing environment should be as close to the eventual operating environment as possible. The difference to TRL 5 is that the testing scenario covers a prototypical technology (compared to a laboratory scale) in a relevant scenario. So, here again, the simulated data used to verify the prototype's functionality, should be sufficiently valid in order to simulate the system's eventual operating environment.

Viability: The system's performance of the laboratory scale functionality test (TRL 5) need to be compared to the performance of the prototype in the simulated operational environment in order to evaluate the effort needed to actually realize subsequent development.

Furthermore, a difference between theoretically forecasted performance and actual performance of the prototype might be taken into account to estimate the ratio of effort to intended functionality. The ratio comparing the actual effort needed to the intended performance gives an insight into the viability of the further developmental process.

MRL: At this point, a strategy for the market entry can be conceived. This may concern the prioritized target market, availability and shipping conditions of potential partners, impending barriers and roughly expected turnover. Furthermore, customer feedback should be gathered systematically to validate the acceptance and potential adjustments concerning the prototype. Finally, at this stage the trademarks should be registered in order to protect the intellectual property.

3.7 TRL 7

At this stage, the validation of an improved prototype takes place. All of the functionalities are implemented in the prototypical technology and are ready for being tested and demonstrated in full operation.

Description: The implemented improvements derived from validating the prototypical system (during TRL 6) need to be documented and explained. In addition, the elimination of major bugs or errors observed in earlier phases needs to be reported. If applicable, single component's reactions to overload scenarios should to be analyzed and described.

Requirement: The specific requirements of the potential operation environment are well known from previous observations and validations. A detailed description of the requirements concerning diverse and realistic operational scenarios was verified in a systematical manner, meaning that parameters affecting the prototype's functionality are entirely identified. This knowledge was implemented to prepare the prototype for a demonstration in real operation conditions.

Verification: At this point, the functionality of the prototype is tested in the potential operation environment for the first time. On small-scale (case) studies (or in cooperation with initial customers), the performance of the improved prototype in use is analyzed. From TRL 6 to TRL 7 this is probably the most important advancement, namely the application of the prototype in an actual, "real-life" operation environment (compared to realistic but still simulated environments during TRL 6).

Viability: Depending on the prototype's performance, the effort needed to eliminate further bugs and to integrate the system in existing architectures or infrastructures has to be explored. Information about this can be derived from the degree to which the prototype is operationally integrated (e.g. running flawlessly) into the existing infrastructure that it is supposed to be executed in. Internal as well as external interfaces need to be analyzed. Customer interviews can also be used in order to estimate the feasibility of small to large adjustments.

MRL: As mentioned above, at this stage, the prototype should be tested and verified in cooperation with pilot customers in order to verify the customer's requirements and satisfaction with the solution. The customers' feedback should be gathered and evaluated systematically (e.g. according to a checklist separated in customer demands and requests). Depending on the results of the customers' feedback evaluation, adaptions of the value proposition or business model of the solution can be necessary.

3.8 TRL 8

To reach TRL 8, the technology has to be debugged entirely and should be thoroughly implemented in the operational infrastructure. Internal and external interfaces are finalized and ensure functionality. Furthermore, a proof of the technology's functionality in the form of a systematic demonstration needs to be presented.

Description: A systematic documentation about the user-technology-interaction, training demands (if applicable) and maintenance efforts should be provided. In addition, final actions taken to eliminate previously reported bugs and to fully integrate the technology in the operational environment should be listed and explained in detail.

Requirement: Concerning potential internal and external interfaces needed to implement the technology, a systematic description of the adaptions, which have taken place between TRL 7 and TRL 8, should be issued. Furthermore, it should be described if and in how far predictions about the technology's performance in real operational conditions have been met. Technological or environmental parameters giving a more detailed insight into how and why those predictions could (or could not) be met, should be provided.

Verification: The verification of the functionality of the technology in the actual operation environment is consolidated during this phase. Additionally to a pure demonstration of the functionality (which took place during TRL 7) at TRL 8 a systematic documentation and a quantitative proof of functionality is intended. This can be derived from the comparison of predicted or aspired performance to the actual performance of the technology. The validation and verification of the technology's functionality in the operational environment is finalized at this point.

Viability: If there are any barriers or future obstacles observed, potentially harming the technology's functionality, resources need to be analyzed, which would be required to eliminate those barriers or obstacles. Furthermore, the actions taken for eliminating last bugs or flaws should be translated into a comprehensive and quantitative measure such as financial or personnel effort.

MRL: During this phase the focus of marketing activities lies on the introduction of the final version of the solution. If applicable, training should be provided for potential customers. The customers' feedback collected from TRL 2 to TRL 7 should be exploited in such a manner that a communication strategy can be derived, which emphasizes the customers' demands and requests. Further, a concept of how to supply services and maintenance to potential customers needs to be conceived.

3.9 TRL 9

The stage of TRL 9 represents the finalized form of the technology; the successful functionality and its interaction with the operational environment is proven and documented. The verification and validation processes are finalized and provide evidence for a performance according to the predicted and aspired extend.

Description: Here the focus shifts to more practically orientated actions and distribution issues, needed to supply the technology to potential customers. More precisely, final plans concerning the manufacturing or multiplication of the technology and actual operation conditions relevant for the utilization of the technology are defined.

Requirement: The requirements at this stage concern specific customer necessities. Actions needed to get the technology installed and operating flawlessly in the customers' infrastructure or environment have to be documented systematically. Additionally, the scope of possible maintenance or training services are stated.

Verification: The verification at this stage takes place in "real-life" scenarios, meaning that the successful functionality and installation of the delivered technology in usage is reported. The customers' / users' satisfaction is evaluated in order to optimize the functionality and to identify potential advancements.

Viability: If applicable, an endurance test followed by a failure analysis needs to be conducted, to prevent malfunctioning in extraordinary conditions or to analyze potentially upcoming impediments. Furthermore, conditions in which the technology operates flawlessly can be compared to conditions of suboptimal functioning to further optimize the functionality of the technology in dependence of different environmental variables. This procedure should be followed by a calculation of resources needed for further improvement.

MRL: At this point efforts are made to supply training, maintenance and services to the customers. Nevertheless, feedback is systematically collected and exploited to further improve the technology's functionality and the supplied service.

4 TRL 1 to 9 Summary and Overview

The following table presents a short summary of the most important benchmarks of the different TRL.

Table 1 Overview TRL 1 to TRL 9

TRL	Description
1	Based on scientific evidence a detailed theoretic description of the technology, its basic principles and functionality is presented. Conceptualized features and key characteristics of the solution are outlined.
2	Hypothetical definition of the application or use cases, which makes the working mechanisms and principles of the solution's comprehensible. Analytical or experimental proof of the use case is provided.
3	Practically orientated action plans are developed. Non-integrated subsystems and single components of the solution are tested in laboratory and analytical studies. Ideally, a proof of concept of the critical functionalities is generated.
4	The first step from scientific research to practical engineering. Parts of the system - or the system as a whole - are tested in small scale tests / basic simulations. The testing environment is rather extenuated and simple.
5	The reliability and validity concerning the test environment and the application of the system as a whole, increases. The configuration of the system incorporates

	the integration of the different subparts. The test environment is comparable to the eventual operating environment in nearly all aspects.
6	A prototype is created and tested. All the functionalities attributed to the eventual final operating system should be realized in the prototype, in order to validate the minimal viability of the system. The system's requirements need to be further specified and fine-tuned to relevant parameters determining the intended operational functionality.
7	An improved prototype is validated in potential operation environments for the first time. On small-scale studies (or in cooperation with initial customers), the performance of the improved prototype in use is analyzed.
8	The solution components is debugged entirely and is implemented in the operational infrastructure. Internal and external interfaces are finalized and ensure functionality. A proof of all the solution components functionality can be demonstrated.
9	The solution is finalized. Verification and validation processes are finalized and provide documented evidence for a performance according to the predicted and aspired extend.

5 Conclusion

Based on NASA and ESA guidelines in combination with best practices of the *Fraunhofer Gesellschaft zur Förderung der Angewandten Forschung*, a methodology could be derived that provides an objective and comprehensible approach to assessing a solution's maturity level. Furthermore, less standardized but still instructive KPIs for the assessment of a market maturity level were presented, providing the reader with useful information concerning promotion - or rather exploitation - activities. The methodology presented above can further be utilized in the assessment of diverse types of technologies, applications or even processes and therefore creates a viable solution to determine the maturity of the different components used within the EU SEC solution as well as the components developed during the very same. This generic approach is highly efficient in the assessment of the maturity of such diverse technologies and processes as there are in the EU-SEC solution. Therefore, the TRA methodology offers the perfect theoretical framework to develop an innovation management according to the EU-SEC Innovation Management Plan (D7.2). In addition to the determination of different maturity levels of actual technologies used in the EU SEC solution, the EU-SEC Innovation Management

Plan will define specific next steps and actions in the further development of the EU-SEC solution assessed by the methodology presented above.

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