

Research Questions

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1 Three papers related to my research topic i.e. Security in Software Engineering

1.1

URL

<https://dl.acm.org/doi/abs/10.1145/3234152.3234189>

Title

Software security in agile software development: a literature review of challenges and solutions

Authors

Klaus Reche Riisom, Martin Slusarczyk Hubel, Hasan Mousa Alradhi, Niels Bonde Nielsen, Kati Kuusinen, Ronald Jabangwe

Venue

Association for Computing Machinery (ACM)

Year of publication

2018

1.2

URL

<https://dl.acm.org/doi/10.1145/3098954.3103170>

Title

Busting a Myth: Review of Agile Security Engineering Methods

Authors

Kalle Rindell, Sami Hyrynsalmi, Ville Leppänen

Venue

Association for Computing Machinery (ACM)

Year of publication

2017

1.3**URL**

<https://www.igi-global.com/article/challenges-and-solutions-for-addressing-software-security-in-agile-software-development/221156>

Title

Challenges and Solutions for Addressing Software Security in Agile Software Development: A Literature Review and Rigor and Relevance Assessment

Authors

Ronald Jabangwe, Kati Kuusinen, Klaus R. Riisom, Martin S. Hubel, Hasan M. Alradhi, Niels Bonde Nielsen

Venue

International Journal of Systems and Software Security and Protection (IJSSSP)

Year of publication

2018

2 The research questions the authors were trying to answer throughout the papers in part 1.

2.1 Software security in agile software development: a literature review of challenges and solutions

Research Questions 1

A compilation of challenges produced in the software development process with the focus on security.

Research Questions 2

A compilation of solutions coupled to the challenges that they overcome.

2.2 Busting a Myth: Review of Agile Security Engineering Methods

Research Questions 1

"The new Agile methods are inherently incompatible with the traditional non-agile security processes" is this myth true?

Research Questions 2

What are the various security activities conducted in Agile secure software development methods?

2.3 Challenges and Solutions for Addressing Software Security in Agile Software Development: A Literature Review and Rigor and Relevance Assessment

Research Questions 1

What challenges hinder security in agile software development?

Research Questions 2

What solutions are employed to overcome challenges hindering security measures in agile software development?

Research Questions 3

What is the rigor and relevance of the primary studies?

3 Analysis of each of the identified research questions from part 2 according to the evaluation criteria we discussed in lecture.

3.1 A compilation of challenges produced in the Agile software development process with the focus on security.

This research question is *interesting* to me and other researchers in the field because the security of a software system is of huge importance. And today, Agile methodology process is the most popular software development process, with a major proportion of software teams using it. The research question is

answerable as it is specific and is not too broad. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study. The question is *measurable* as it is clear to what data we need to look at various other research works which have analyzed the Agile software development processes for gaps and challenges. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research papers.

3.2 A compilation of solutions coupled to the challenges that they overcome.

This research question is *interesting* to me and other researchers in the field because the security of a software system is of huge importance. And today, Agile methodology process is the most popular software development process, with a major proportion of software teams using it. The solutions to the security challenges faced by these software teams would be of great help to them in delivering a robust and secure software product. The research question is *answerable* as it is specific and is not too broad. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study. The question is *measurable* as it is clear to what data we need to look at various other research works which have analyzed the Agile software development processes for gaps and challenges and have suggested solutions for them. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research works.

3.3 "The new Agile methods are inherently incompatible with the traditional non-agile security processes" is this myth true?

This research question is *interesting* to me and other researchers in the field because the knowing the truth of the stated myth will help many software teams take the right decision on which software development process to follow. The research question is *answerable* as it is specific and is not too broad. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study by analyzing the various other research works. The question is *measurable* as it is clear to what data we need to look at i.e. various other research works which have analyzed the Agile software development processes for incompatibility with traditional non-agile security practices. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research studies.

3.4 What are the various security activities conducted in Agile secure software development methods?

This research question is *interesting* to me and other researchers in the field because the knowing the various security activities will help the reader to gain a better idea about the Agile process. It will help software teams introduce new security practices into their development process. The research question is *answerable* as it is specific and is not too broad and can be answered by analyzing various Agile processes. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study by analyzing the various other research works. The question is *measurable* as it is clear to what data we need to look at i.e. various Agile methods and find the security practices conducted in them. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research studies.

3.5 What challenges hinder security in agile software development?

This research question is *interesting* to me and other researchers in the field because the knowing the various security challenges would help the software team take proper decisions. The research question is *answerable* as it is specific and is not too broad and can be answered by analyzing various Agile processes. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study by analyzing the various other research works. The question is *measurable* as it is clear to what data we need to look at i.e. various Agile methods and look for security drawbacks and limitations in them. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research studies.

3.6 What solutions are employed to overcome challenges hindering security measures in agile software development?

This research question is *interesting* to me and other researchers in the field because the knowing the various solutions to overcome the security challenges would help the software team take proper decisions. These solutions can be incorporated into their development methods and hence, improve software product robustness and security. The research question is *answerable* as it is specific and is not too broad and can be answered by analyzing various Agile methods. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study by analyzing other research works. The question is *measurable* as it is clear to what data we need to look at i.e. various Agile methods and look for solutions that integrate security into the Agile process. The question is *appropriately scoped* as it can be answered

within reasonable time and with available resources which are other research studies.

3.7 What is the rigor and relevance of the primary studies?

This research question is *interesting* to me and other researchers in the field because the knowing the rigor and relevance of a particular study will help the reader in deciding whether or not to read the corresponding research work. The research question is *answerable* as it is specific and is not too broad and can be answered by analyzing the various research studies. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study. The question is *measurable* as it is clear to what data we need to look at to find the answer. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research studies.

4 ONE research question, my advisor thinks that can be worked upon on as part of my degree.

Suggest which security practices to include into the Agile development process to incorporate security, depending upon the type of software system.

This research question is *interesting* to me and other researchers in the field because the knowing the selected security practices to include into the development process depending upon the type of software product, would mean an optimal increase in the software security quality with minimal effort. The research question is *answerable* as it is specific and is not too broad and can be answered by analyzing the various research studies. The question is *repeatable* as it is not specific to any specific setting and other researchers would be able to reproduce the study. The question is *measurable* as it is clear to what data we need to look at to find the answer. Here, we would look the different categorization of software systems and then we would see which software practices when included would make the biggest impact. We would also survey software developers upon what their ideas are for incorporating security practices. The survey will consist of qualitative, quantitative and categorical questions. The question is *appropriately scoped* as it can be answered within reasonable time and with available resources which are other research studies.