

FMH606 Master's Thesis

Title: Software Testing, Data and Cyber Security and GDPR

USN supervisor: Hans-Petter Halvorsen

External partner: Cevia Solutions

Task background:

Poor data security costs Norwegian companies' large amounts. In addition to direct financial loss, serious security breaches could lead to lost reputation with customers and partners. security testing is very important in IT industry to protect data by all means. In addition, the introduction of GDPR has changed the software industry with respect to how they can handle personal data in the software systems today.

Cevia Solutions (a Norwegian startup company) develops a modern and efficient cloud-based document management software for the industrial, maritime and oil and gas market.

The businesses will have proprietary and high security information uploaded to this cloud system. There is therefore a requirement that the information is secure, and that users can log into the software securely from distant locations.

For more information regarding the system:

<http://www.ceviasolutions.com/edemso>

Task description:

In this project we will help Cevia Solutions to test their software (Edemso) against vulnerabilities. Edemso is a cloud-based software. The aim is to figure out the security level of the system and suggest improvements regarding data security and GPDR based on security testing of the system.



Suggested Project Activities:

Address: Kjølnes ring 56, NO-3918 Porsgrunn, Norway. **Phone:** 35 57 50 00. **Fax:** 35 55 75 47.

- Get an overview of **Today's threats and trends** within the topics of Data and Cyber Security and Software Testing. Get an overview of different platforms, operating systems, different types of applications in context of Data Security.
- Get an overview of **Software Testing** (with focus on Data Security and Security Testing), **Data Security** and **GDPR** and see how you can apply some of these techniques in context of this project
- **Test Tools:** Get an overview of relevant tools and software for testing, and especially software that can be used for Security Testing in this project. Automated Test Tools.
- **Development of Tools and Methods** that should be used in the Testing of the System.
- Development of Tools and Methods for Planning and Verification of GDPR
- **Security Testing:** Testing the system properly, including **Test Planning** (create Software Test Plan, STP, create Test Cases, etc.) and documentation of the Testing and the Test Results (**Test Documentation**). Create **Test Environment**.
- **Penetration Testing:** Play the role of the attacker and play around the system to find security related bugs, such as hacking test from outside, from an account to another account, from a user to user etc.
- Test of **Two Factor Authentication** and other relevant authentication mechanisms.
- Test the system according to **OWASP**. The Open Web Application Security Project (OWASP) is an organization focused on improving the security of software.
- Propose recommendations for increased security and improvements in general.
- Get an overview of **ISO/IEC 27001** and see it in context of this project. ISO/IEC 27001 provides requirements for information security management system (ISMS). An ISMS is a systematic approach to managing sensitive company information so that it remains secure.
- Test connections to third party API's
- Get overview of vulnerabilities and suggest improvements regarding data security and GDPR based on the testing of the system

Student category: IIA or any student with interests in Data Security and Software Testing (EET, EPE, IIA or PT students). The project is suitable for both campus and online students.

Practical arrangements: None

Supervision:

As a general rule, the student is entitled to 15-20 hours of supervision. This includes necessary time for the supervisor to prepare for supervision meetings (reading material to be discussed, etc).

Signatures:

Supervisor (date and signature):

Student (write clearly in all capitalized letters):

Student (date and signature):