PhD 8: Safety- and Security-Related Assessment Methods for Continuous Integration and Deployment (CI/CD)

This project is dedicated to the question of what effects the short-cycle software updates have on the direct interaction between man and machine and how it can be ensured that personal safety is guaranteed at all times. In the course of this, a prototype will also be developed that will provide the risk assessment and corresponding measures to ensure safe operation during short-cycle software updates in production.

Motivation & Problem Statement

• Increasing interconnectivity in the industrial environment – Industry 4.0
• Frequent updates will be necessary in industry in the future [1, 2]
• Why? Vulnerabilities + New Functionalities [2, 3, 4]
• DevOps & DevSecOps enable short cycle-updates [5]
• Typically Safety & Security are considered separately
• DevSecOps focuses only on security[5], SafeScrum only on safety [6]

How Can the Safety and Security of Short-Cycle Software Updates of Human-Machine Systems Be Assessed and Ensured?

Expected Research Results

• Framework for Continuous Integration and Deployment (CI/CD) for safety-critical systems in manufacturing
• Inclusion of relevant safety & security standards
• Combination of safety & security (assessment) into whole lifecycle
• Proof of concept evaluation with real use case in pilot factory

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Education/Work Experience
• Business Informatics Studies
• 5 years experience as software developer

Interests
• Human-Machine-Interaction
• Software Engineering

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