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Data Science Roadmap: An Insight to Achieve Secure Software Engineering

Secure Software by Design

Our aim is to improve the software quality by implementing a Software Engineering process that allows "secure software by design".

To achieve this, we follow a couple of activities to close the gap and feed insights gained by applying techniques from data sciences back to improve Software Engineering processes.

Capturing the Provenance of Software Artifacts

In our approach we analyze the actual process that led to a software artifact. To capture this Software Engineering provenance we follow different strategies: Repository mining, surveys, and recording of developer interactions (e.g., using IDE extensions or key loggers).

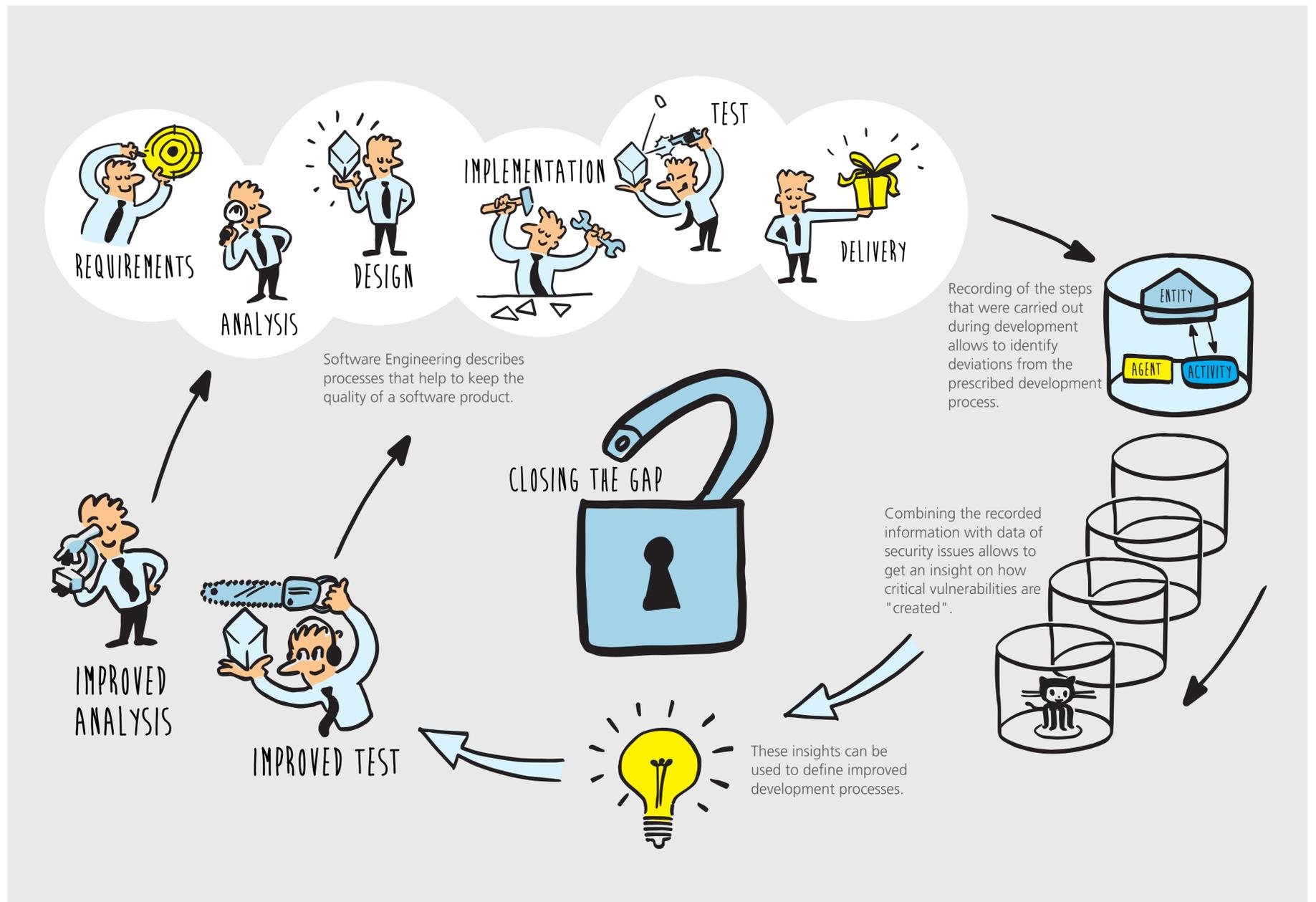
Static and Dynamic Analysis and Common Security Score

We incorporate existing tools for static and dynamic analysis of the resulting software.

Next to existing tools we plan to introduce a novel static analysis approach based on intermediate languages.

Finally we will create a common scoring system that combines the results of all these different security auditing tools.

How to improve software security



Who we are

The German Aerospace Center (DLR) is one of the largest research centers in Germany. In 40 institutes located at 20 sites all over Germany we have a total of more than 8000 employees. Our staff conducts excellent research in aeronautics, space, energy, transport, digitalisation and security.

This project is a joint collaboration between the newly founded Institute of Data Science, the Software Engineering Group of DLR, and TU Ilmenau.

What we do

In our wide variety of research projects we collaborate and share our results with partners in Germany, Europe, and worldwide.

The base for a broad range of our research is individual software developed in-house by non-computer scientists. This software is made available to our project partners. However, as there is no focus on IT security, this is prone to open up security holes.

By shifting the focus towards IT security we are extending the successful work of our Software Engineering Group.

