

Effective Software Tests (with Python)

CMTC / IVV NWZ Research Software Engineering day 2022

Michael Meinel
Martin Stoffers

Institute for Software Technology
German Aerospace Center



Knowledge for Tomorrow



Institute for Softwaretechnology

DLR Institute for **Software Research**,
Software Engineering, **Artificial Intelligence** and
Scientific Computing

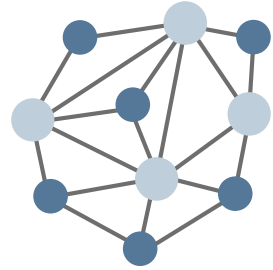
About 100 employees at sites in

- **Cologne-Porz**
- Berlin-Adlershof
- Brunswick
- Oberpfaffenhofen
- Bremen-Flughafen (ECOMAT)

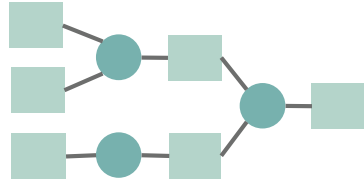
<https://www.DLR.de/sc>



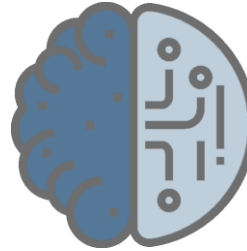
Current Research



Distributed & Decentralized Systems



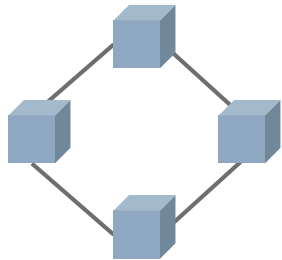
Workflows & Provenance



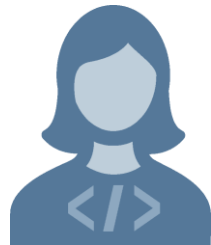
AI & Knowledge



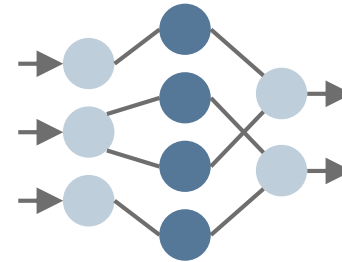
Software Engineering



Distributed Databases & Blockchains



Human Factors



Machine Learning



Software Analytics



Our Mission

We improve software quality in DLR, Helmholtz and worldwide.



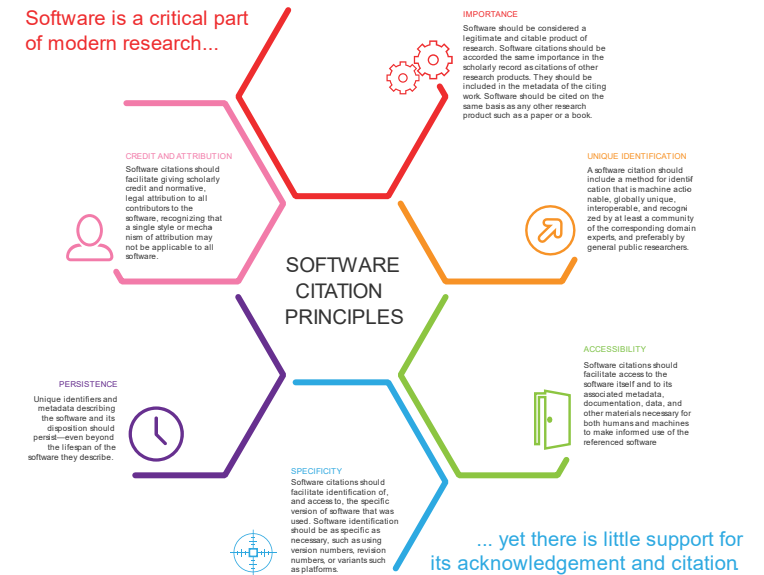
HELMHOLTZ
SPITZENFORSCHUNG FÜR
GROSSE HERAUSFORDERUNGEN



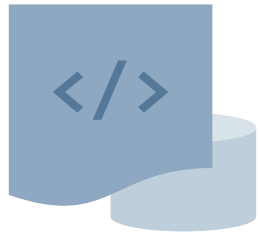
We research, develop and implement Software Engineering solutions.



We support Software to be accepted as unique research output.



Research Topics



Research Software Engineering

- Knowledge Transfer
- Guidelines
- Consultations
- Development
- Tools



Softwareanalytik

- Repository Mining
- Knowledge Graphs
- Provenance



Open Science

- Open Source
- (Research-) Data Management
- Open (Meta-) Data Formats
- Reproducibility



Your Trainers Today

Michael Meinel



Martin Stoffers



Agenda

- Introduction to (Unit-)Testing
 - Reasons for Testing
 - Effective Tests
 - Testing Legacy Code
- Introduction to pytest
 - Writing Tests
 - Running Tests
 - Test Driven Development
- Test Coverage
 - Measure Your Test Quality
 - Identify Test Leaks



Based on HIFIS Workshop (<https://hifis.net>)

„Test Automation with Python“
by T. Schlauch, M. Meinel, C. Hüser

<https://gitlab.com/hifis/hifis-workshops/test-automation-with-python>

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