## Research Objectives and Research Questions

- RO 1: Improve IDE and LSP Generation
  - RQ 1.1: How can IDE generation be improved to support LSP and DAP?
  - RQ 1.2: What are the key challenges in generating LSP and DAP for different programming languages?
  - RQ 1.3: How can a universal LSP and DAP be developed to support multiple languages and IDEs?
- RO 2: Facilitate LSP and DAP Modularization
  - RQ 2.1: How can LSP and DAP modularization be facilitated in language workbenches?
  - RQ 2.2: What are the key challenges in modularizing LSP and DAP for different programming languages?
  - RQ 2.3: How can LSP and DAP modularization be integrated with existing language composition and modularization features in language workbenches?
- RO 3: Reduce to L x 1 the number of combinations to support L languages
  - RQ 3.1: How can the number of combinations required to support multiple languages be reduced to L × 1?
  - RQ 3.2: In what ways does simplifying the development process for language support enhance efficiency?
  - RQ 3.3: How does reducing combinations impact the speed and effectiveness of creating language support?
- RO 4: Leverage Neverlang for LSP and DAP in LPL Development
  - RQ 4.1: How can Neverlang's LPL development features be leveraged for creating a reusable core for LSP and DAP functionalities?
  - RQ 4.2: What are the key benefits of using Neverlang for LSP and DAP development in the context of LPLs?
  - RQ 4.3: How does leveraging Neverlang's LPL features enhance the scalability and efficiency of LSP and DAP development?

## Language Workbenches

- JustAdd -> Computer Science department of the Lund University (Lund, Sweden)
- Melange -> DiverSE research team at the Institut National de Recherche en Informatique et en Automatique(INRIA) (Paris, France)
- MontiCore -> Software Engineering group at the RWTH Aachen University (Aachen (Aquisgrana), Germany)
- MPS -> JetBrains Research (Saint Petersburg, Russia)
- Rascal -> Centrum Wiskunde & Informatica (CWI) (Amsterdam, Netherlands)
- Spoofax -> Delft University of Technology (Delft, Netherlands)
- Xtext -> Eclipse Foundation (Ottawa, Canada)
- Neverlang -> Università degli Studi di Milano (Milan, Italy)

## Jurnals and Conferences

- ACM (Association for Computing Machinery) -> New York, USA, 1947. It is the world's largest scientific and educational computing non-profit association.

**Journals**

- JSS (Journal of Systems and Software)
- TSE (IEEE Transactions on Software Engineering)
- TOSEM (ACM Transactions on Software Engineering and Methodology)
- TOPLAS (ACM Transactions on Programming Languages and Systems)

**Conferences**

- ICSE (International Conference on Software Engineering)
- PLDI (Programming Language Design and Implementation)
- OOPSLA (Object-Oriented Programming, Systems, Languages, and Applications)
- SLE (Software Language Engineering)

## Important Figures

- Martin Fowler: Renowned for his work on software development methodologies. His book "Domain-Specific Languages" is a seminal work in the field.
- Markus Voelter: Known for his contributions to the development and promotion of language workbenches like JetBrains MPS.
- Eelco Visser: A professor at Delft University of Technology, Visser has made significant contributions to the field through his work on the Spoofax language workbench.
- Gregor Kiczales: Known for his work on aspect-oriented programming (AOP).
- Antonia Bertolino: Known for her work on software testing and quality assurance.

# Additional Resources

### Journals

- CACM (Communications of the ACM)
- SCP (Science of Computer Programming)
- STTT (Software and Systems Modeling)
- JOT (Journal of Object Technology)
- JFP (Journal of Functional Programming)
- SCP (Science of Computer Programming)

### Conferences

- SPLC (Software Product Line Conference)
- ICPC (International Conference on Program Comprehension)
- SPLASH (Systems, Programming, Languages, and Applications: Software for Humanity)
- POPL (Principles of Programming Languages)
- MODELS (Model Driven Engineering Languages and Systems)
- ECOOP (European Conference on Object-Oriented Programming)
- ESEC/FSE (Joint European Software Engineering Conference and Symposium on the Foundations of Software Engineering)
- ASE (Automated Software Engineering)
- ICFP (International Conference on Functional Programming)
- ESOP (European Symposium on Programming)
- VMCAI (Verification, Model Checking, and Abstract Interpretation)
- GPCE (Generative Programming and Component Engineering)