

EUTypes

WG 3: Types for programming

Location: Novi Sad

Date: Thursday May 26, 2016

Moderator: Andreas Abel

Contact: andreas.abel@gu.se with subject "COST WG 3"

Notes: Jesper Cockx

Objectives

- Increase security, reliability, resilience and reusability by using strongly typed languages
- Design, study, and deployment of type theories that capture properties beyond functional correctness
- Help development of new strongly typed programming languages (e.g. dependent Haskell)
- Develop new tools for languages with strong type systems:
type inference, program synthesis, automatic retrieval of code from libraries
- Be the new functional programming in 25 years

Agenda

- Year 1: set up WG, join meeting, define research agenda
- Year 2,3,4: joint meeting, report on progress, discuss and adapt agenda

Tasks

- Gather ongoing research efforts: topics, groups, papers
- Stimulate research and collaboration (STSM, WG meetings, invited talks)
- Documentation of findings for COST
- Set up mailing list: at first together with other WG's, separate mailing list if the volume gets too big.

Possible topics

- Dependently typed programming languages (Agda, Coq, Haskell, Lean, Idris, ...)
- Linear dependent types, and applications to session types (see Betty COST action)

- Variance typing systems (directed type theory?)
- Parametricity
- Complexity analysis
- Type systems for security/privacy
- Strongly type-safe metaprogramming and generic programming
- Efficiency of compiled code from dependently typed languages
- Termination checking
- Universe polymorphism
- Partiality inside type theory
- Framework for creating typecheckers and compilers with less effort
- Liquid typing systems
- Reactive programming

Questions related to other workgroups

- How does interaction with WG 1 go? Do they ask us to implement a new type theory or do we order a new type theory from them?
- What about the overlap of our WG with WG 2? E.g. library reuse, efficiency, interfaces, ...
- What's the difference between a PL (WG 3) and a verification tool (WG 4)? From a theoretic point of view, there is not much difference, but outsiders have a different view.

Next meeting

Paris, January 2017 (co-located with POPL)

Open call for invited speakers, especially ones from the industry