

Goal: Create a working group to discuss, sync and implement formal specifications for LLVM IR.

Initial scope: provenance model.

Info:

<https://hackmd.io/@nikic/SJBt4mFCII>

Public: LLVM IR semantic changes for safety

Q: Does the plan for working on formal semantics for LLVM include applying those to the LLVM MLIR dialect?

A: No

Q: What is the output document of discussing the various aspects of LLVM IR semantics? Is it machine readable semantics or a change in the Language Reference?

A: Updating the language reference. The output document is plain english. Alongside this is an update of existing implementation of LLVM optimizations and front end LLVM IR generation to match the lang ref contract. Also where applicable updates to Alive2. Based on these changes it would be possible to develop machine readable semantics, but this is out of scope currently.

Q: Is there any attribute inference that is unsound left?

A: ?

Q: Formal verification tools for the language?

A: Not planned.

In scope:

- Reliably determined undefined behavior.

Out of scope of initial WG:

- addressspace cast
- escape analysis, concurrency

Other out of scope areas:

- parts of LLVM function calls that are specified via C (?)
- returns_twice attribute, setjump, longjmp

Action item - not related to provenance semantics but flagged as a gap during the roundtable:

- Update Lang Ref on the SSA validity for unreachable code.