

Library annotations and tools for checking software

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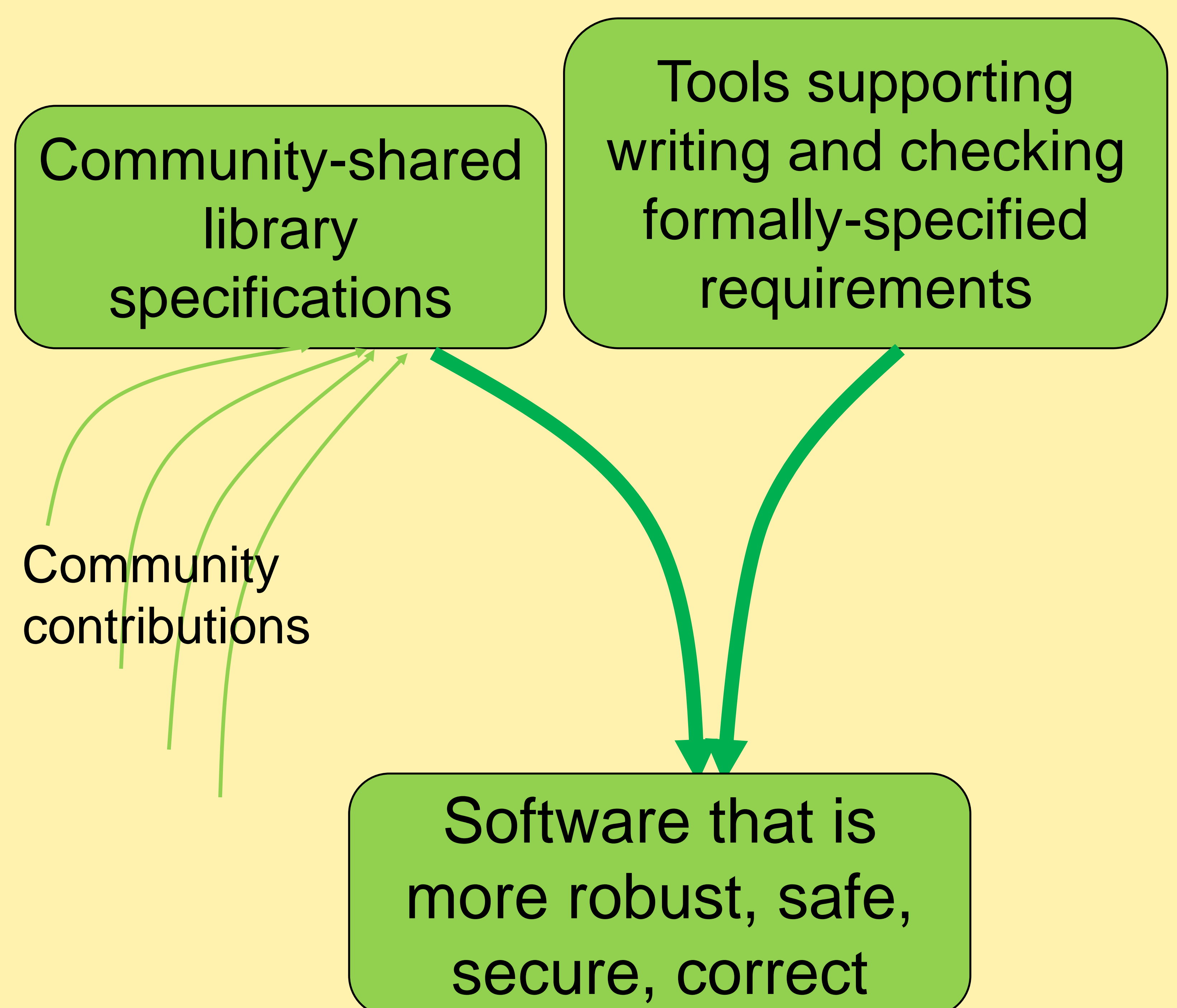
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Challenge:

Broaden the use of **behavioral specifications** to aid **software verification** using **static formal methods**.

Scientific Impact:

- Improved tools and libraries for **checking software during development**
- Scaling the logical foundations of automated SW checking



Approach

- Improved library annotations (in ACSL and JML)
- Improved tools (Frama-C for C and OpenJML for Java)
- Improved documentation
- Collaborative user communities
- Encouraging joint contributions

Results to date

(all published at ***annotationsforall.org*** or in journals)

- Assessment of specification languages and tools
- Interaction with Java Modeling Language community
 - tutorial, new JML reference manual in progress
 - improved JML tools, updated to Java 8 (OpenJML)
 - improved Java library specs and tests
- Interaction with ACSL community
 - Review and editing of ACSL documentation
 - Additional ACSL library specifications and tests
 - Experience reports on specifying open-source software
 - Prototype of bridges between proprietary and open-source tools
- Specification Language and tools for LLVM
- REUs, student projects, theses, etc. at various levels