# The SMT-LIB Initiative and the Rise of SMT
## (HVC 2010 Award Talk)

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**Abstract.** Satisfiability modulo theories (SMT) is a branch of auto-
mated reasoning that builds on advances in propositional satisfiability
and on decision procedures for first-order reasoning. Its defining feature
is the use of reasoning methods specific to logical theories of interest in
target applications. Advances in SMT research and technology have led
in the last few years to the development of very powerful satisfiability
solvers and to an explosion of applications. SMT solvers are now used
for processor verification, equivalence checking, bounded and unbounded
model checking, predicate abstraction, static analysis, automated test
case generation, extended static checking, scheduling and optimization.
While the roots of SMT go back to work in the late 1970s and early 1980s
on using decision procedures in formal methods, the field was born in
the late 1990s with various independent attempts to harness the power of
modern SAT solvers, reaching the current level of sophistication with the
research and development advances of the last decade. Major enablers for
these advances were SMT-LIB, a standardization and benchmark collec-
tion initiative supported by a large number of SMT researchers and users
world-wide, and its offsprings: the SMT workshop, an international work-
shop bringing together SMT researchers and users of SMT applications or
techniques; SMT-COMP, an international competition for SMT solvers
supporting the SMT-LIB input format; and SMT-EXEC, a public execu-
tion service allowing researchers to configure and execute benchmarking
experiments on SMT solvers.

This talk provides historical perspectives on the development of the
field and on the SMT-LIB initiative and its offsprings. It highlights the
initiative's milestones and main achievements, and the role of the au-
thors and other major contributors in it. It then concludes with a brief
discussion of a few promising directions for future research in SMT.