

# NSF:CCRI: Developing an Open-Source, State-of-the-Art Symbolic Model-Checking Framework for the Model-Checking Research Community

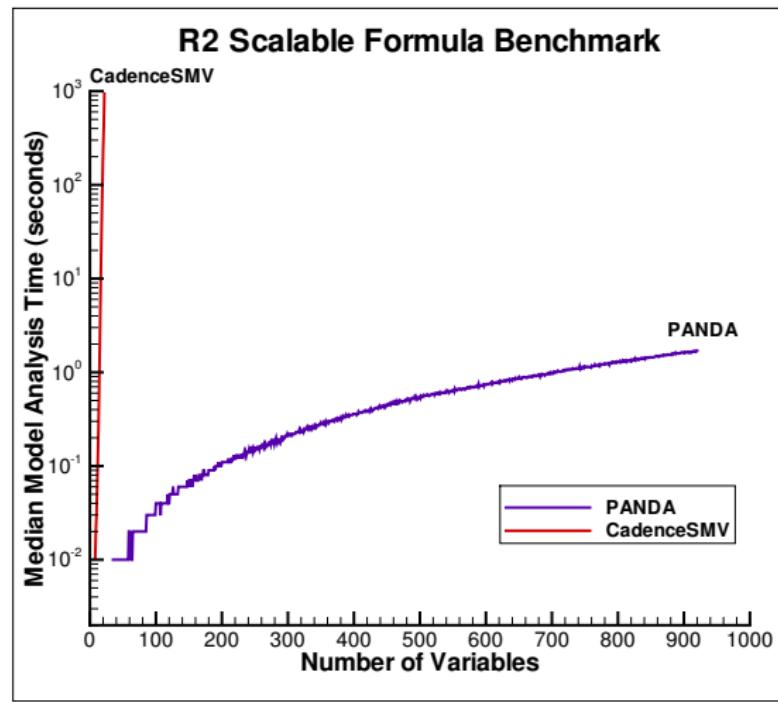
Rozier, Shankar, Tinelli, Vardi

**Technical Advisory Board Meeting**  
November 8 & December 6, 2021

Website Coming Soon...

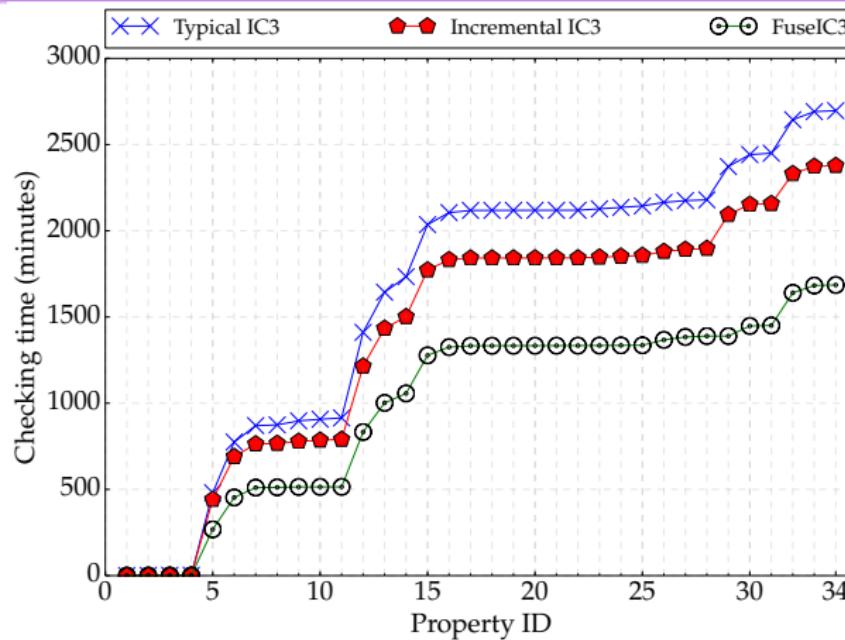
<https://www.aere.iastate.edu/modelchecker/>

# The Problem<sup>1</sup>



<sup>1</sup> K.Y.Rozier and M.Y.Vardi, "A Multi-Encoding Approach for LTL Symbolic Satisfiability Checking," FM 2011. ☰ 🔍 ↻

# FuseIC3: An Algorithm for Checking Large Design Spaces<sup>2</sup>

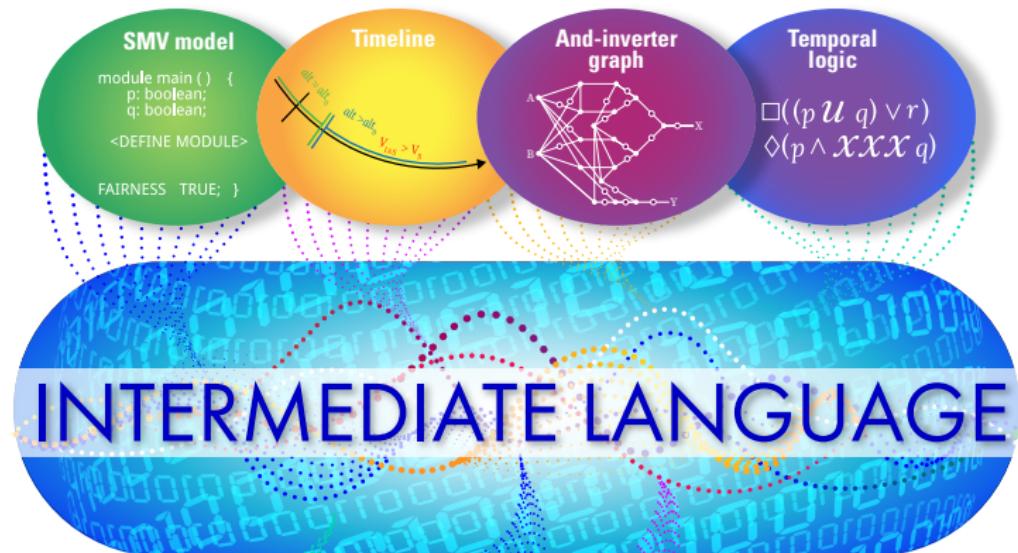


Model checking **34 formulas** over **1,620 models** is **5.48x faster**

<sup>2</sup> Rohit Dureja and Kristin Yvonne Rozier. "FuseIC3: An Algorithm for Checking Large Design Spaces." In Formal Methods in Computer-Aided Design (FMCAD), IEEE/ACM, Vienna, Austria, October 2-6, 2017.

# The Problem Continues...

- nuXmv, CadenceSMV, others are **closed source**
- ABC, HWMCC tools are **limited to low-level modeling languages**
- No **open-source, research-enabling connection** between:
  - Rich modeling languages with real-world benchmark models
  - State-of-the-art back-end MC algorithms



# Goals for Intermediate Language

- Allow adding a **modeling language** via **translation to/from IL**
- Allow adding an **MC algorithm** via **translation to/from IL**
- IL is efficient/accessible so as to **encourage usage in future MCs**
- IL suitable for on-going **community standard**

# Agenda

- ① Goals & objectives overview (questions?)
- ② Initial proposal for a community model checking intermediate language
- ③ Moderated discussion