

# COST action EuroProofNet. WG3 Program Verification

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# COST. COST action<sup>1</sup>

- **COST** = COoperation in Science and Technology
- pan-European intergovernmental framework since 1971
- Goal: development of scientific and technological networks
- Website: <https://www.cost.eu/>

A **COST action** can:

- organize schools and workshops
- provide travel and conference/workshop grants (**ITC grants – deadline May 1st**)
- A COST action is managed by a core group elected by the representatives of every participating country



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<sup>1</sup>Slide courtesy of Frédéric Blanqui

# Goal of EuroProofNet<sup>2</sup>

## Boost the interoperability and usability of proof systems

- Express new proof systems in the Dedukti logical framework
- Promote the output of checkable proofs from automated provers
- **Make program verification more effective and accessible**
- Gather proofs translated in Dedukti into a database
- Provide tools for searching large libraries of formal proofs
- Develop the use of machine learning techniques in proofs
- Develop a modular theory of type theories
- Develop natural or controlled languages in proof systems

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<sup>2</sup>Slide courtesy of Frédéric Blanqui



# Your Contribution<sup>3</sup>

- Keep in mind that the main goal of the action is **INTEROPERABILITY**
- Contribute to the EPN website (teams, tools, publications):  
<https://europroofnet.github.io>
- Discuss on <https://epn.zulipchat.com/>
- Advertise your (virtual) meetings, lectures and seminars
- Advertise internship, grant and job opportunities
- Participate in the Action or WG activities, meetings and schools

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<sup>3</sup>Slide courtesy of Frédéric Blanqui



# WG3 - Program Verification

- Alicia Villanueva, UPV Universitat Politècnica de València, Spain. WG3 leader
- Mădălina Eraşcu, West University of Timisoara, Romania. WG3 vice-leader



# About WG3

- About 160 members from 32 different countries
  - different perspectives and approaches to the verification problem

## Goal:

- Make program verification more effective and accessible.
- WG3 - beyond the state-of-the-art
  - Verification approaches can envisage [new applications and integration of proof systems](#) to overcome challenging problems that combine features that are better expressed in different logics.
  - Scalability and usability of verification techniques can be improved thanks to the exploitation of [synergies among different verification tools](#).
  - Make verification techniques more successful by [taking advantage of advances on interoperability](#) between automated and interactive theorem proving, the mathematical formalisation of program semantics, and type theory.



# The WG3 Dresden meeting

## Key idea

to bring together **industry designers** and **formal methods research community** to share ideas and experiences on how to improve the tools to reduce the barrier to adoption.

- Despite significant advances in formal methods, there remains a huge barrier to the adoption of formal methods in the industry



# The WG3 Dresden meeting

## Key idea

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- Despite significant advances in formal methods, there remains a huge barrier to the adoption of formal methods in the industry
  
- Thanks to Muhammad Usama Sardar for his hard work in organizing this event.





# Goals of the WG3 Dresden meeting

- Bring together members of the different communities (including [formal methods](#), [systems engineering](#) and [security](#))
- Create an excellent and inclusive network of researchers in Europe.
- Make formal methods [more effective](#) and [accessible](#) to [all stakeholders](#).
- Transfer knowledge in terms of expertise and scientific tools across the different disciplines and between [academia and industry](#).
- Foster [collaborations](#) and build synergies among participants to ease the path to more fruitful results for the Action.

## Deliverables:

- **D7 (month 48)**: Collection of [verification challenges](#) with summary of working recipes for verifying them.
- D5: Comparison of the approaches used in the Software Verification competition SV-COMP.
- D6: Software prototype for the inference of program specifications as logical axioms.



Enjoy the meeting!

