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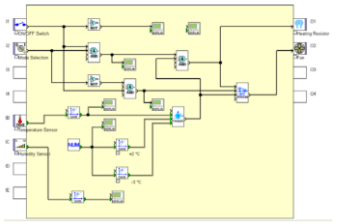
Formal modelling and verification methods of new generations of networks of Programmable Logic Controllers (PLC)

Keywords: Compilation, Parallel Programming, Concurrent Systems, Formal Methods

PLC devices

- ❑ Embedded systems
- ❑ Programmable via FBD (Functional Block Diagram)



Networks of PLCs

- ❑ High degree of asynchronous concurrency.
- ❑ Globally Asynchronous Locally Synchronous.
  - ➢ **Hard to design and debug**

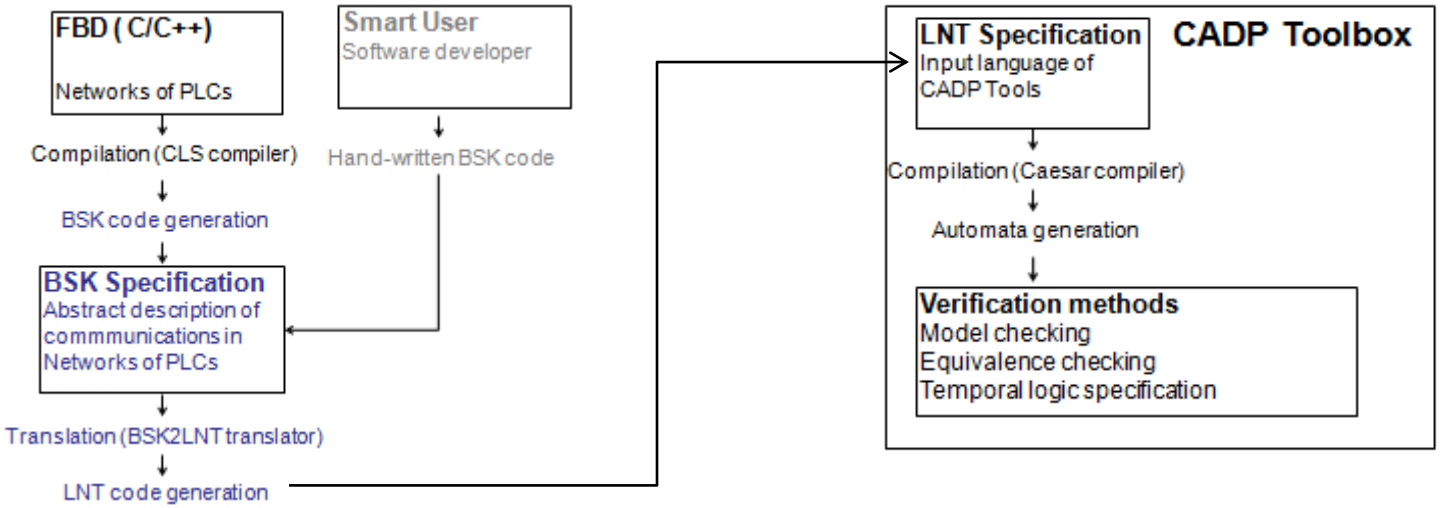
Solution: CADP software toolbox

Formal methods for the design and verification of asynchronous concurrent systems

- ❑ Explicit-state verification
- ❑ Performance evaluation

http://cadp.inria.fr/software

Expected results



First Results (6 months)

- **Modelling individual PLCs**

  BSK language formal definition (grammar and formal semantics)

- Translator of BSK programs into LNT language (BSK2LNT Tool)