M1 Informatique / MOSIG

Introduction to modeling and verification of digital systems

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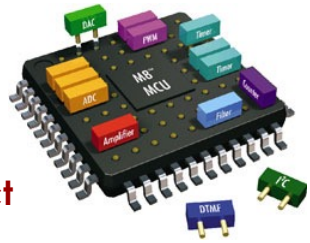
TIMA

Purpose

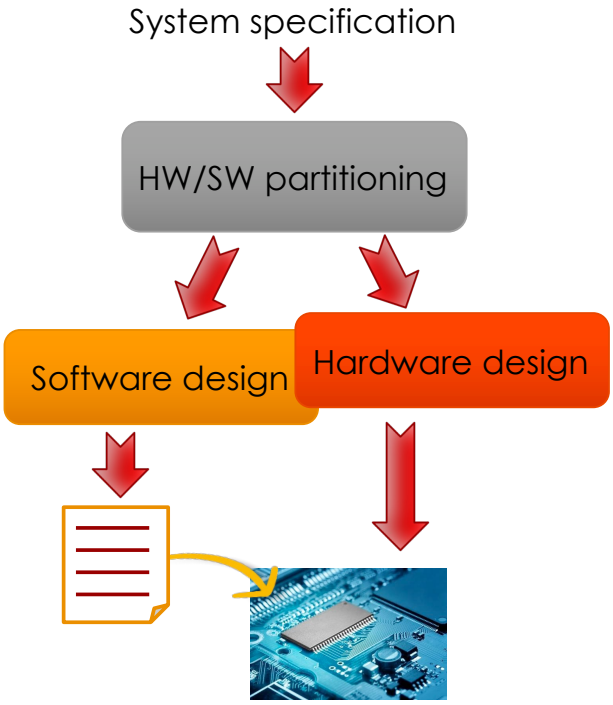
- **Embedded system design**



Hardware and **software** which **closely interact**

Purpose

- **Embedded system design**



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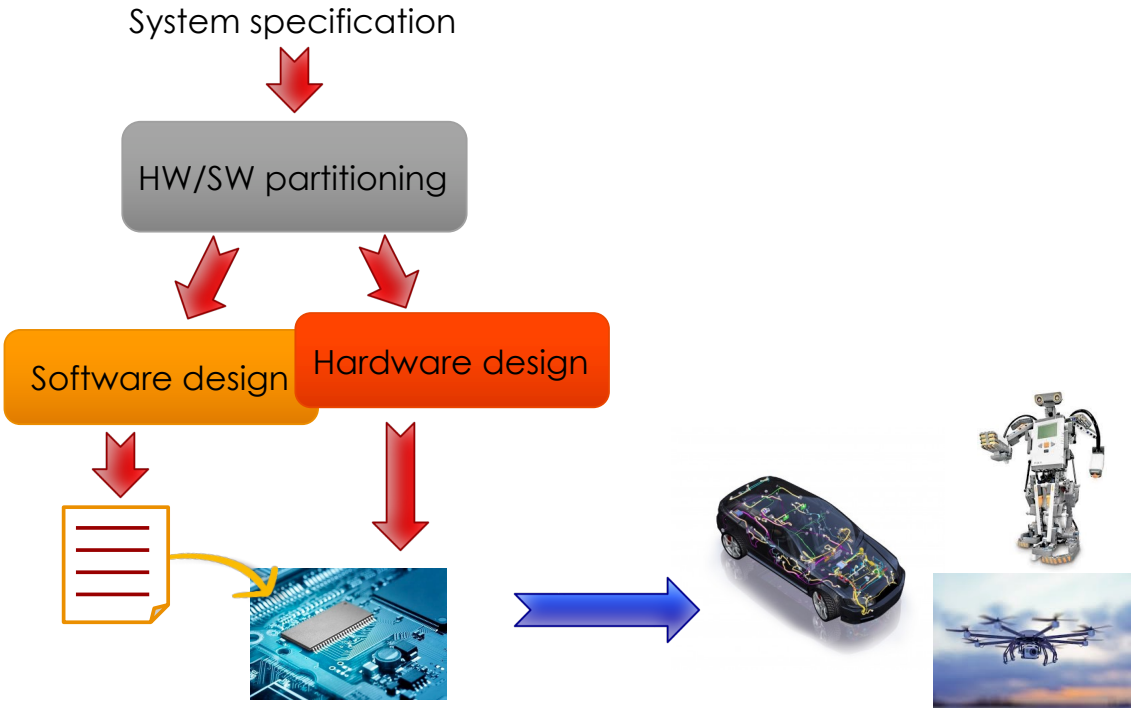
- **Embedded system design**



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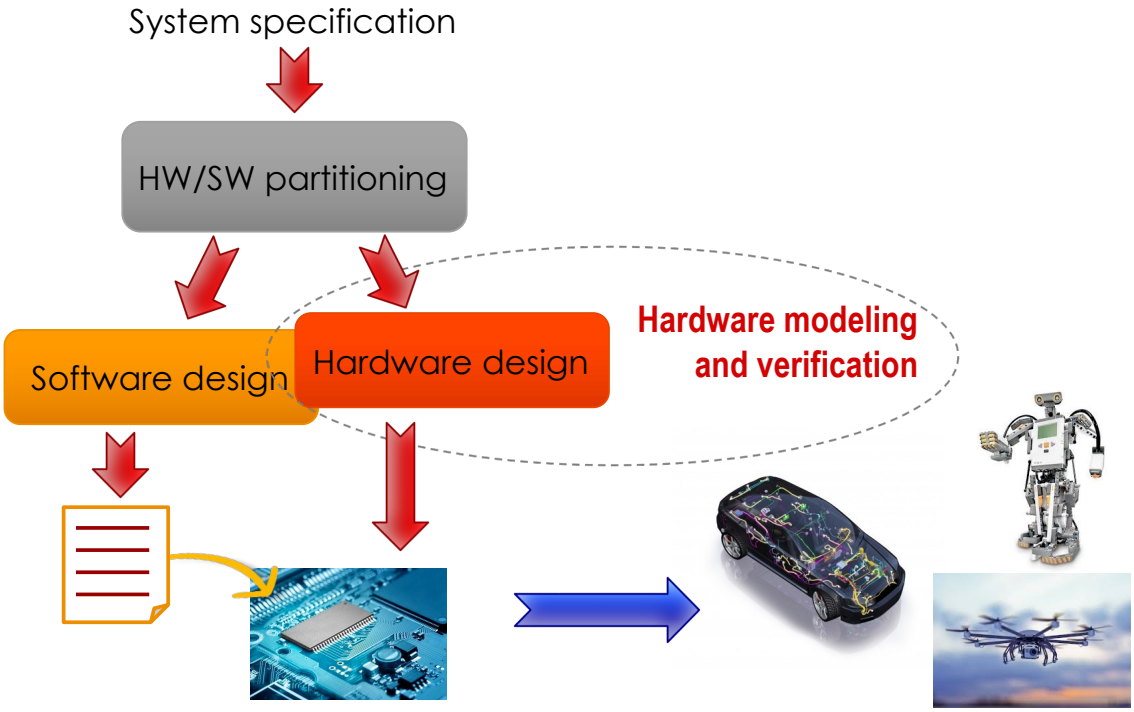
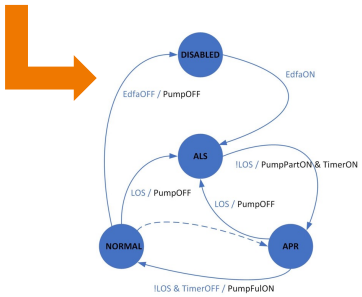


Hardware design ?

In this course

Specification of the expected behaviour



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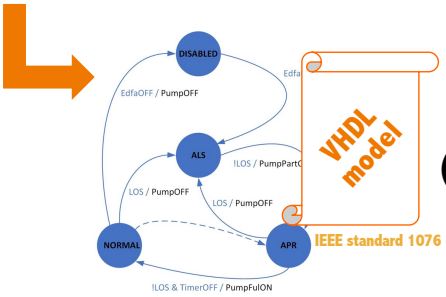
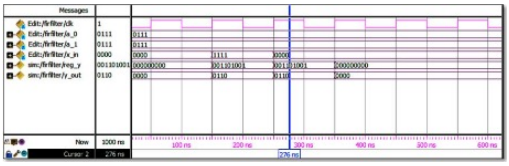


1

Simulation



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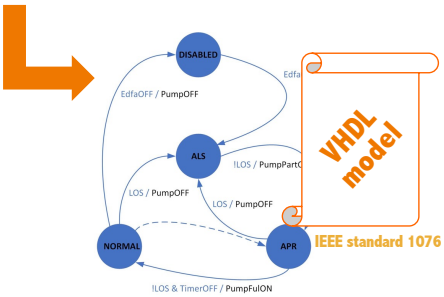
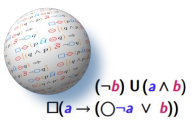
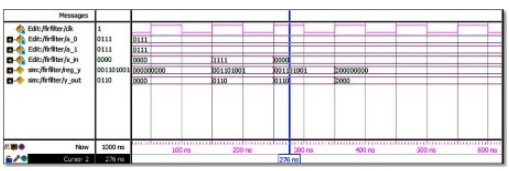


Correctness properties
(temporal assertions)

2



Simulation



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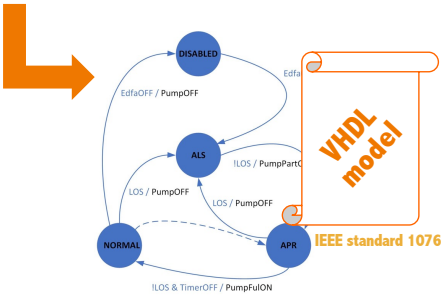
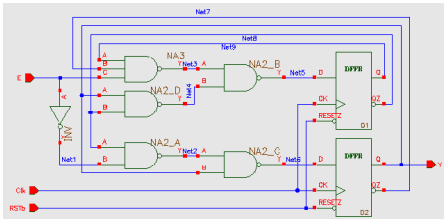
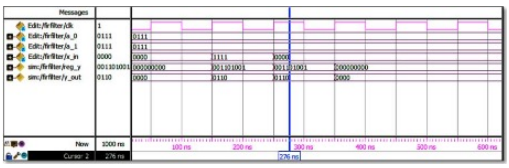


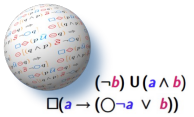
3 Logic synthesis (ASIC)



Simulation



Correctness properties (temporal assertions)



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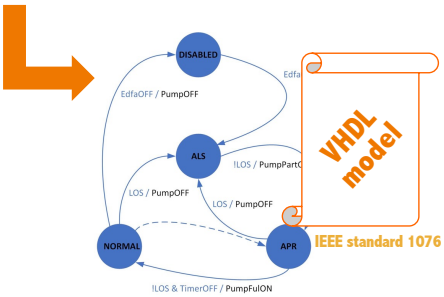
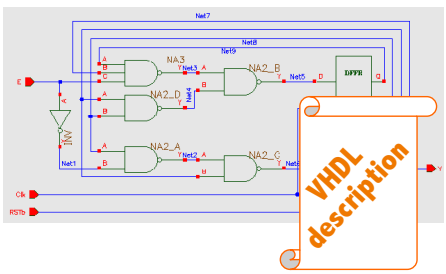
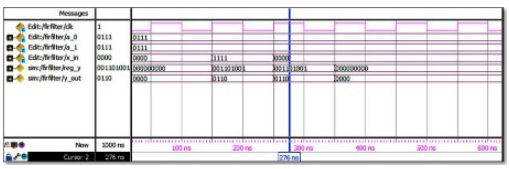


Logic synthesis (ASIC)



Simulation

4



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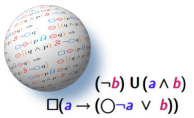

Hardware design ?

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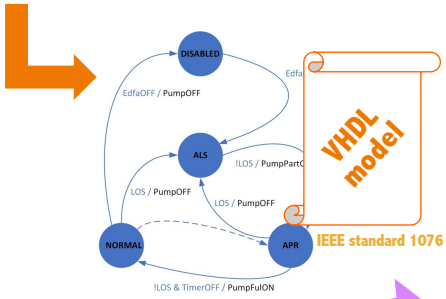
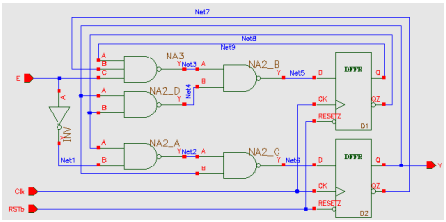


Logic synthesis (**ASIC**)



FPGA synthesis

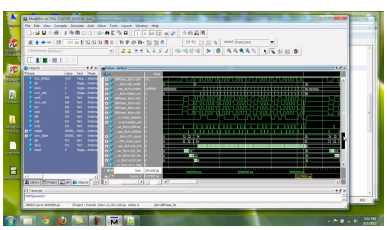
5

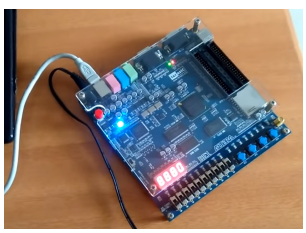
Hardware implementations

(with hardware constraints: frequency, area, consumption,...)

Organization

- **11 sessions**
  - 6 lecture+exercises sessions
  - 5 lab sessions
- **Prerequisite:** almost none
- **Assessment**
  - Complete project (5 lab sessions): from specification to FPGA, 50%





  - Exam, 50%

Organization

- Lab sessions at **CIME Nanotech** (Centre interuniversitaire de microélectronique et nanotechnologies)
  - Use of **industrial software tools**