A Toolchain for UML-based Modeling and Simulation of Networked Embedded Systems (Lab)

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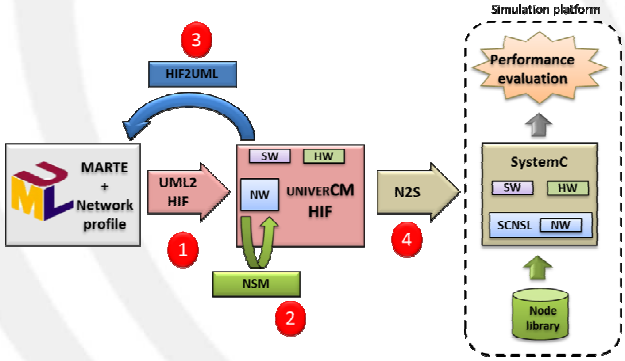
Methodology implementation

Tools Are:

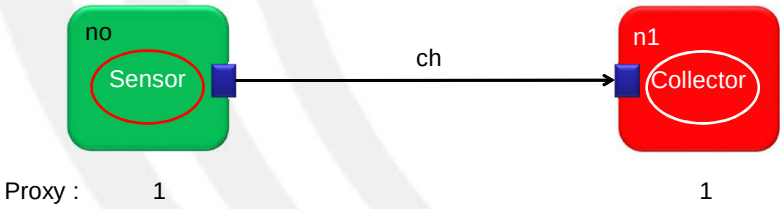
1. UML2HIF
2. NSM
3. HIF2UML
4. N2S



Virtual machine

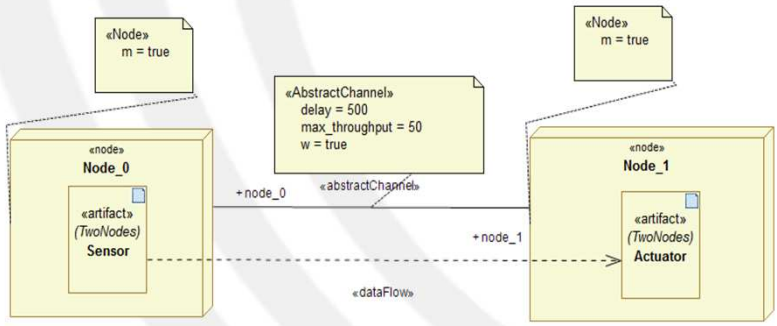
- Open Oracle VM VirtualBox.
- Create a new virtual machine
  - O.S. Linux
  - Version: Debian 32bits
- Use existing Hard disk
  - Image in “/opt/HIF Demo VM clone”
- From VM: file-> preferences->general-> default machine folder-> /tmp/ create a folder here
- Create a snapshot for this machine
- Open the machine. (password is hifdemo)

Example # 1
Two Nodes



Example # 1

- Two nodes with wireless channel

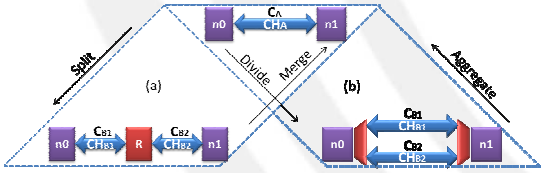


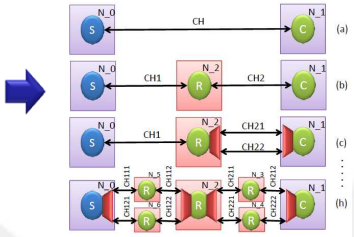
Exercise # 1

1. Model Example #3 by using Papyrus + NW profile
2. Use the tool-chain to generate SCNSL code
3. Compile and execute it
4. Calculate the PLR and the Average delay
5. Change the channel delay and tx power and check the generated code

Manipulation

Structural Manipulation Approach: It aims to help the designer to optimize the synthesized network configuration





Exercise # 2

1. Use the NSM tool to manipulate the communication channel
   1. Scan channels names
   2. Apply divide rule 3 times
   3. Apply split rule 2 times

Exercise # 3

1. Use the HIF2UML tool to draw HIF description in UML of exercise 1
2. Observe the profile stereotypes annotations on the generated UML description
3. Repeat the previous step and do the same after you apply split rule