


ESD Electronic Systems Design
Synthesis Verification Testing Power Communication




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


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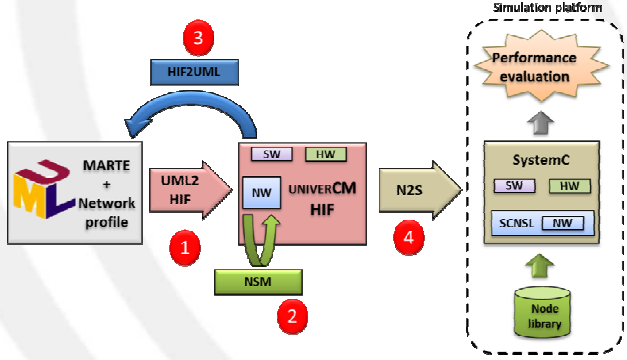






Methodology implementation

Tools Are:

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





The flowchart illustrates the methodology implementation. It starts with a 'MARTE + Network profile' box on the left. An arrow labeled '1' points to a 'UML2 HIF' box. From there, an arrow labeled '2' points to a 'NSM' box. An arrow labeled '3' points from 'UML2 HIF' to a 'UNIVERCM HIF' box. From 'UNIVERCM HIF', an arrow labeled '4' points to a 'SystemC' box. The 'SystemC' box is part of a 'Simulation platform' which also includes 'Performance evaluation', 'SCNSL', and 'NW'. A 'Node library' box at the bottom feeds into the 'SystemC' box.

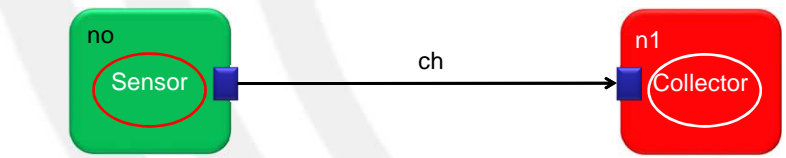
Virtual machine

- 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)

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Example # 1 Two Nodes

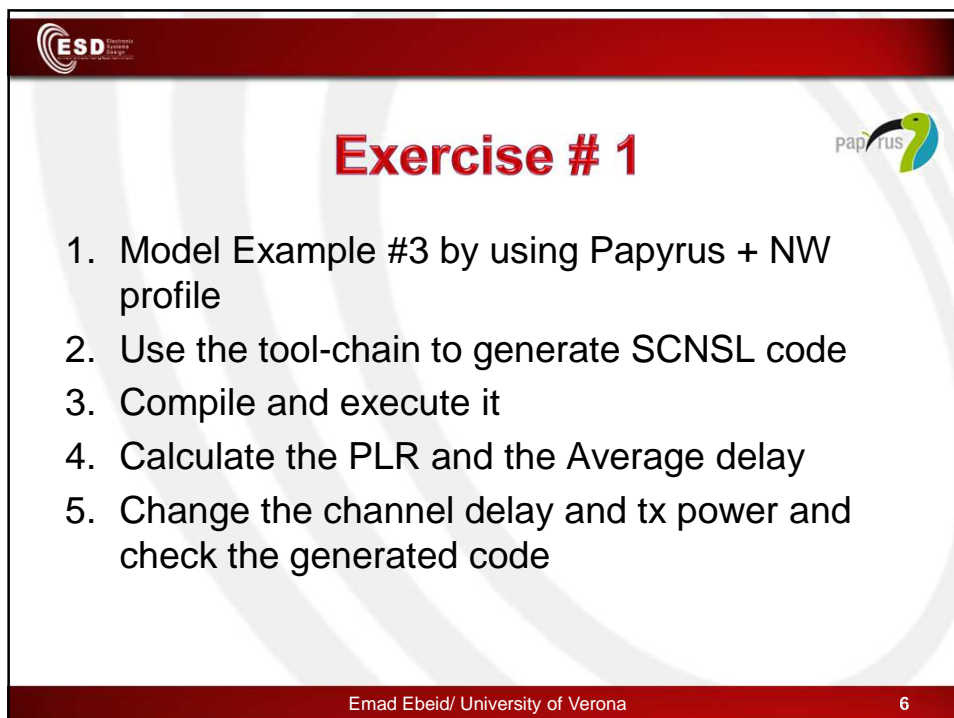
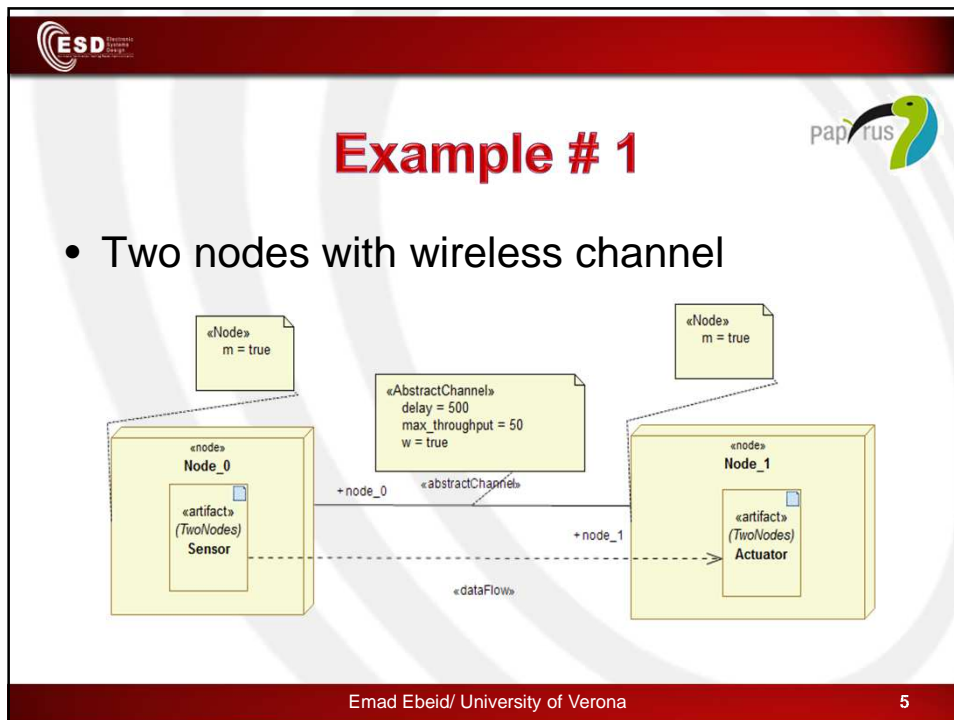


```

graph LR
    n0[n0 Sensor] -- ch --> n1[n1 Collector]
  
```


Proxy : 1
1

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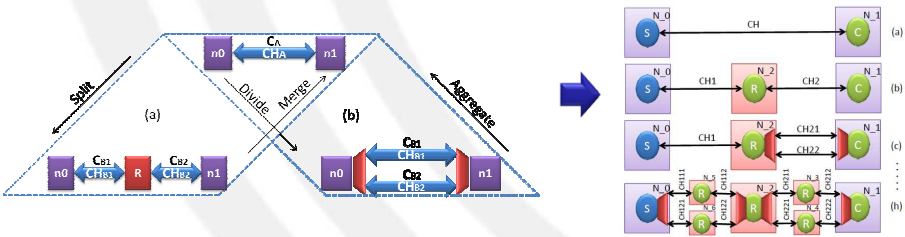


ESD Elements of Systems Design

Manipulation




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



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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

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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