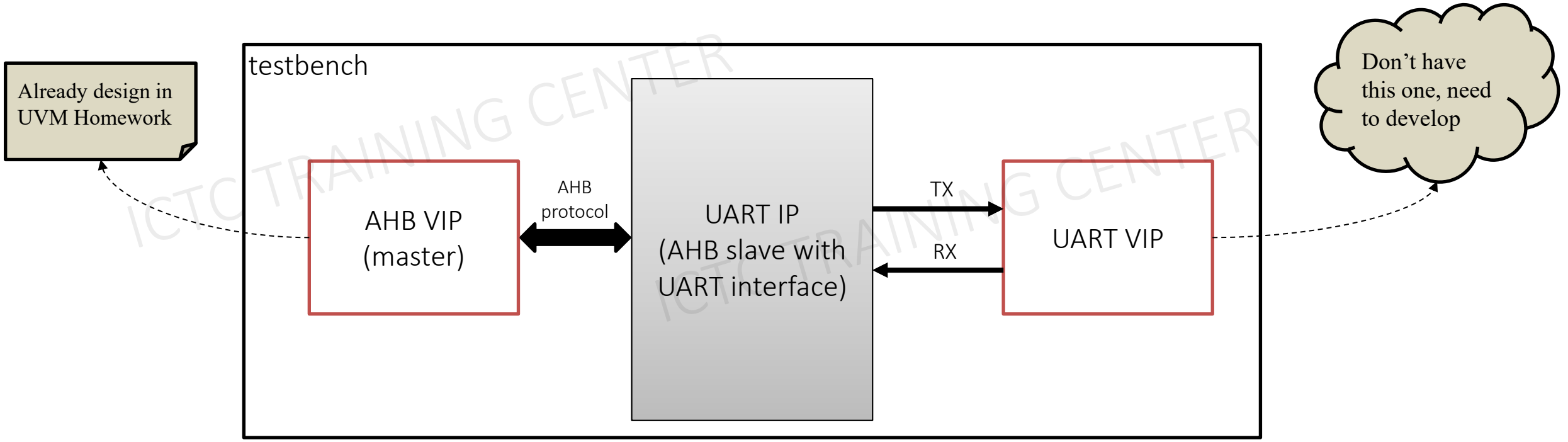
Session 14->17: Project 2
Develop and validate UART VIP

Project 2: UART VIP

Why need develop UART VIP?

- Let's review final project



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Project 2: UART VIP

Common VIP Structure

- First, VIP is Verification IP, it use for connect to DUT for verifying DUT function.
- If VIP is not available for project, we need to buy VIP from vendor or design our VIP
- VIP not only work correctly as protocol (have checker to check protocol behavior), but also have ability to inject error to test the DUT
- Basically, VIP will contain agent with sequencer, driver and monitor,…. inside
- Besides, VIP also have:
  - Transaction for user use it in sequence
  - Configuration for configure working mode of the VIP
  - Virtual Interface for monitor and driver to control the real interface

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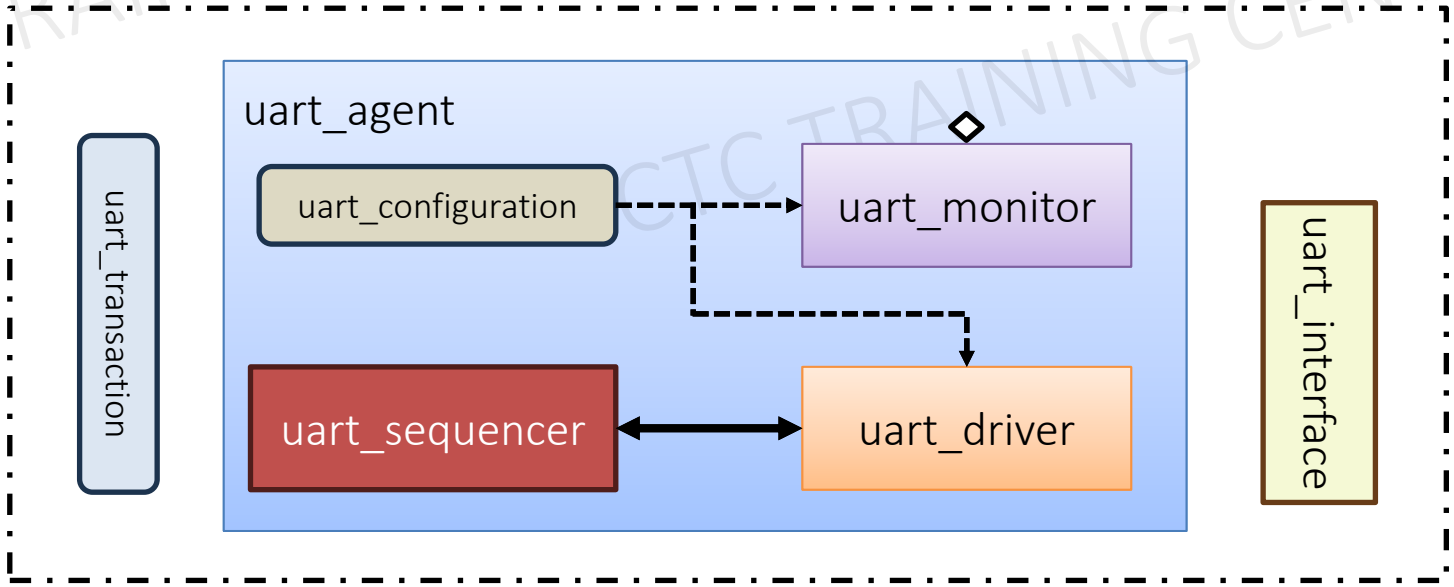

Main VIP component

Project 2: UART VIP

Develop VIP (2 Session)

Instructions

1. Investigate UART protocol to get understanding: UART Protocol Summary
2. Copy /ictc/student_data/share/dv_advanced/project2 to your working directory
3. In directory project2/uart_vip, develop UART VIP following structure as slide 291. Step to develop VIP:
    1. Define transaction for user can control stimulus generated.
    2. Define an interface.
    3. Create a configuration for configure VIP working mode
    4. Implement Driver.
    5. Implement Monitor.
    6. Create sequencer.
    7. Create agent that contain Sequencer, Driver and Monitor in ACTIVE and Monitor in PASSIVE mode.
    8. Create package that contain all file of design.
    9. Create file .f for easy to compile.
4. Go to sim directory, source project_env.bash.
5. Use make build command to clean up syntax error if any.

❖ **TIPS!**

- Configuration in step 3 normally extend from uvm_object
- Parity mode, number of data width, number of stop bit and baud rate,… can put into configuration class object
- Transaction can define direction of transfer, data transfer,….

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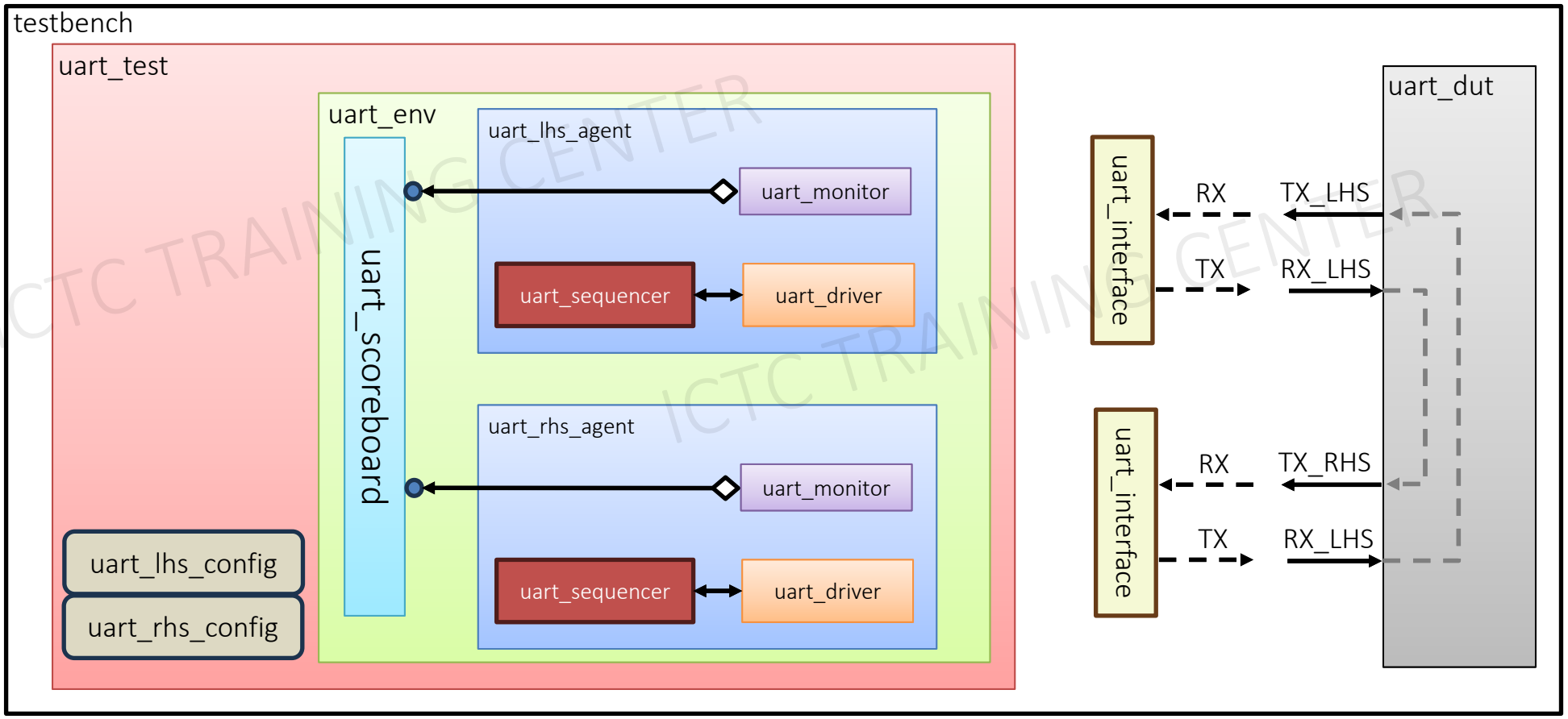
Project 2: UART VIP

Validate VIP

- Testbench structure to verify the VIP



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Project 2: UART VIP

Validate VIP (2 session)

Instructions

1. Create Vplan for VIP testing
2. Bring up environment for VIP valiation, following structure of slide
    1. Create testbench
    2. Create environment
    3. Create test
    4. Create sequence
    5. Create scoreboard to compare data integrity
    6. Create package for sequence, test and environment for compilation and usage
3. Create testcase to test and improve VIP

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