

# I Flare CPU Instruction Cache Interface

## I.A ibus Interface

valid: out Bool()  
ready: in Bool()  
addr: out UInt(32 bits)  
devData: in UInt(16 bits)

- This is using valid/ready handshaking, but valid does not have to be driven in a registered fashion (so unlike AXI I guess?).

- Pseudocode fragments:

- when (ID.up.isValid) {  
    when (  
        ID.rMultiCycleState === MultiCycleState.PRIMARY;  
        and we have a group 7 instruction that has not had an `ID.up.isFiring`  
        yet;  
    ) {  
        psIdHaltIt := True;  
        ID.haltIt();  
        ID.rMultiCycleState := MultiCycleState.G7\_SUB\_DECODE;  
        ...  
    }  
}
- when (io.ibus.ready) {  
    do C-style `union`-like instruction decoding;  
    ID.dontHaltIt();  
} otherwise {  
    ID.haltIt();  
}

- | ibus.valid | ibus.ready | psIdHaltIt | # | IF.haltIt | ID.haltIt |
|------------|------------|------------|---|-----------|-----------|
| 0          | 0          | 0          | # |           |           |