

## 6. HW & SW Interfaces

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## 1 HW and SW Interfaces

“Software Engineering for Embedded Systems...”, R Oshana and M Kraeling, 2013

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## Events generated in hw notify sw

- 1 software-initiated events
- 2 software initiated hardware tasks
- 3 hardware send events to sw upon the completion of the task
- 4 External events
- 5 external triggers of events

# Ways of notifying software of an event

- no notification
- timed delay
- status bit (polling)
- interrupt bit (interrupt)

- must be Read/Write 1 Set
- software must write a 1 to set the bit
- software must not write a zero to clear the bit
- if just Read/Write bit
  - either hardware can miss the set bit (slow hw)
  - or hardware can see the old set bit again (slow sw)

# Queue bit handshake

- software reads the queue bit
- for the cleared queue bit, software can set the bit to give tasks to a hardware
- after setting it, software can poll the bit until it clears
- for the cleared queue bit, software recognizes the hardware's acknowledgement
  
- hardware checks the bit occasionally
- for the set bit, hardware starts executing the task
- when starting, hardware clears the bit