

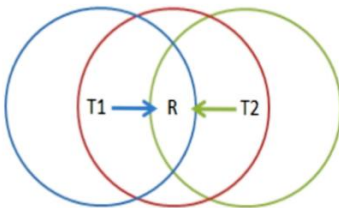
❖ HIDDEN NODE AND EXPOSED NODE PROBLEM:

- ☞ In WSN, to exchange data two exchange control frames are used before transmitting data
 1. Request to Send(RTS)
 2. Clear to Send(CTS)
- ☞ RTS/CTS is the optional mechanism used by the 802.11 wireless networking protocol to reduce frame collisions introduced by the hidden node problem.
- ☞ These control frames duty includes
 - ✓ If sender sees CTS, transmits data.
 - ✓ If other node sees CTS, will idle for specified period.
 - ✓ If other node sees RTS but not CTS, free to send.

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❖ HIDDEN NODE AND EXPOSED NODE PROBLEM: ...cntd

➤ Hidden Node/Terminal Problem:

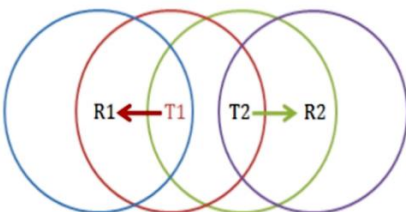


- ✓ T1 and T2 can't see each other, both send to R
- ✓ RTS/CTS can help
 - Both T1 and T2 would send RTS that R would see first.
 - R only responds with one CTS (say, echoing T1's RTS).
 - T2 detects that CTS doesn't match and won't send.

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❖ HIDDEN NODE AND EXPOSED NODE PROBLEM:

➤ Exposed Node/Terminal Problem:



- ✓ T1 sending to R1, T2 wants to send to R2.
- ✓ As T2 receives packets, carrier sense would prevent it from sending to R2, even though wouldn't interfere
- ✓ RTS/CTS can help
 - T2 hears RTS from T1, but not CTS from R1
 - T2 knows its transmission will not interfere at T1's receiver
 - T2 is safe to transmit to R2.

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