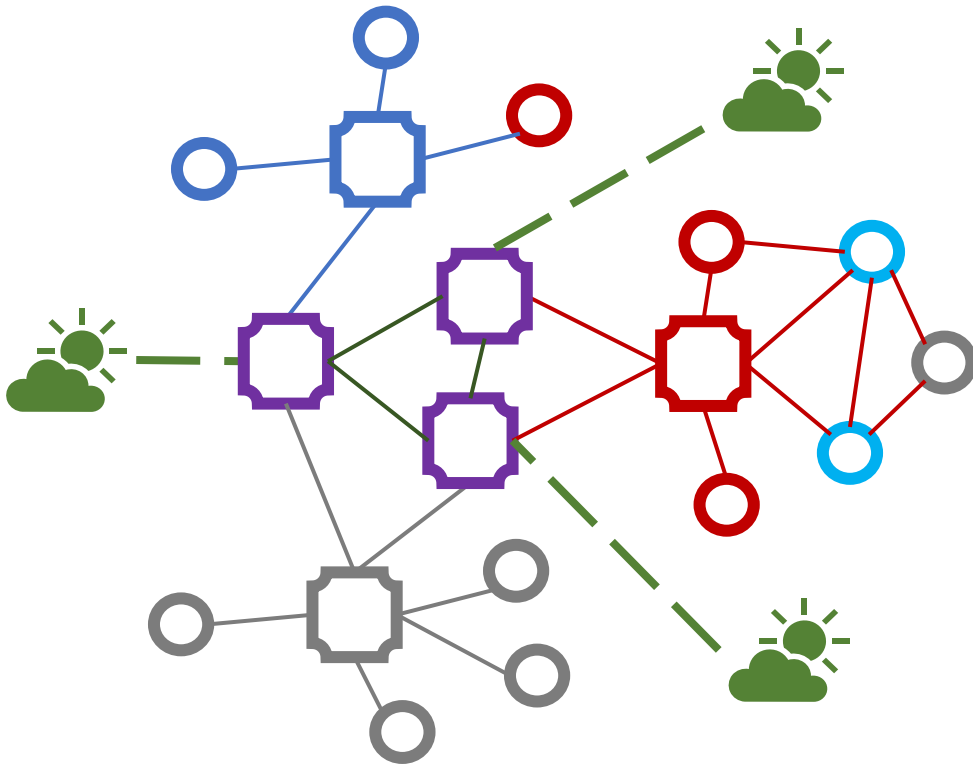
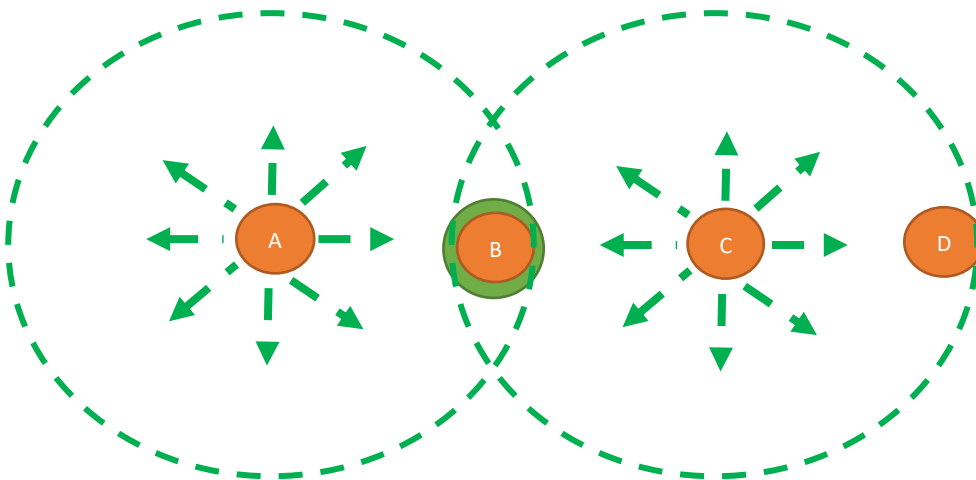


At the oral exam in the first session of June I will ask you to comment one (or more than one) of these schemas:

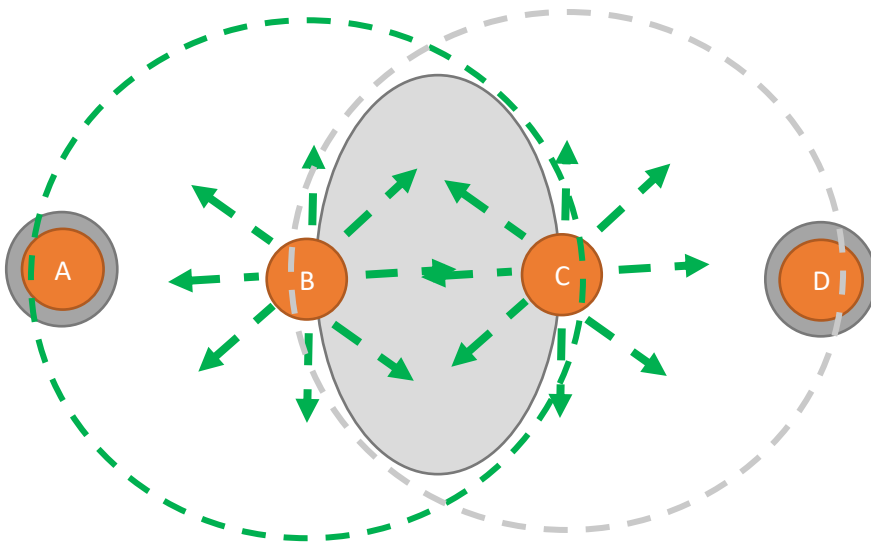
1) interoperability



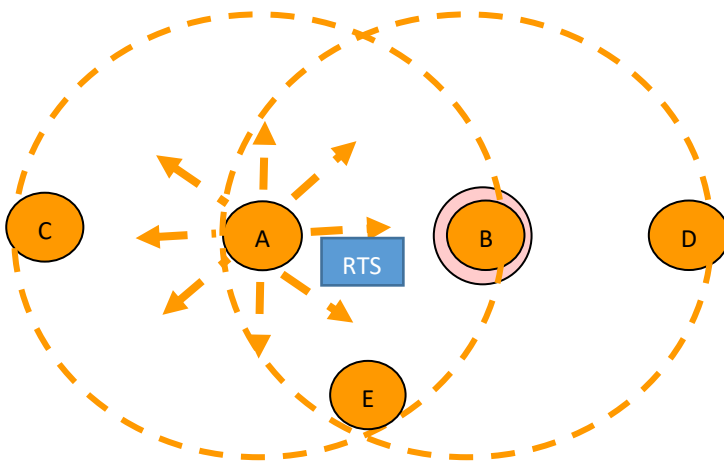
2) hidden terminal



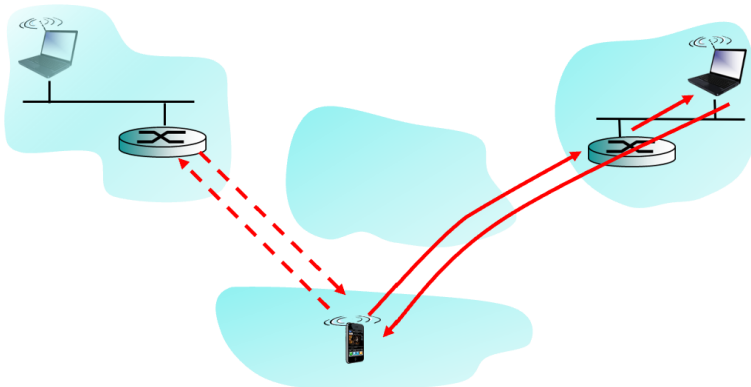
3) exposed terminal



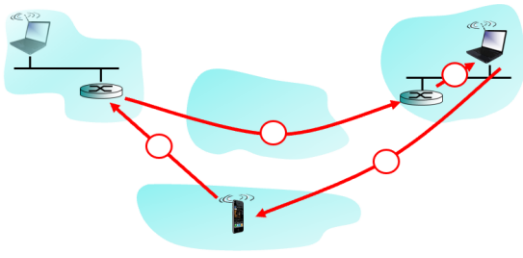
4) RTS/CTS



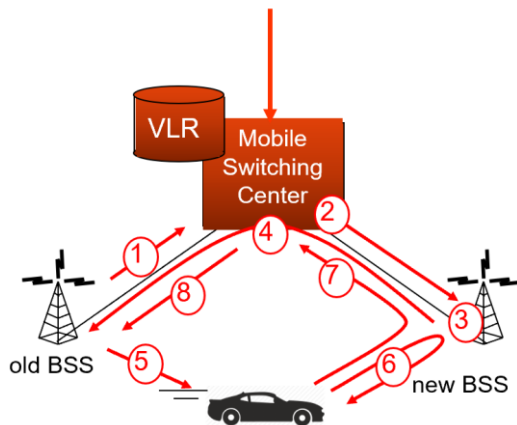
5) Mobile networks



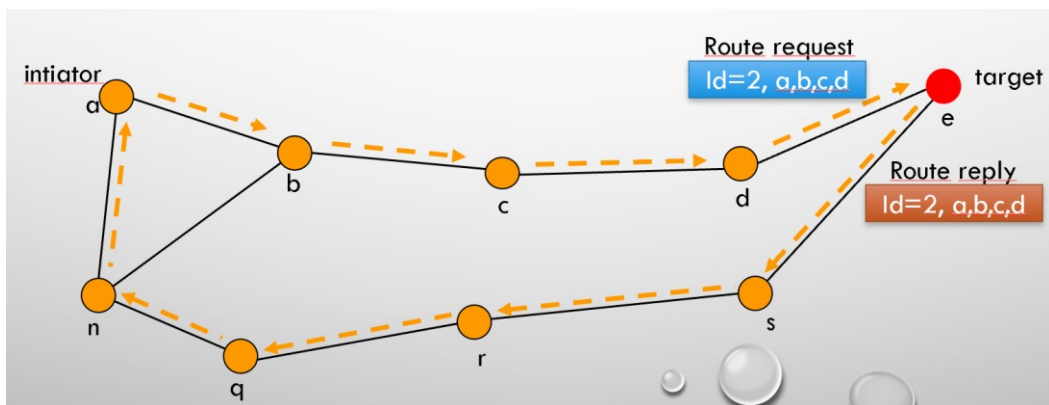
6) Mobile networks



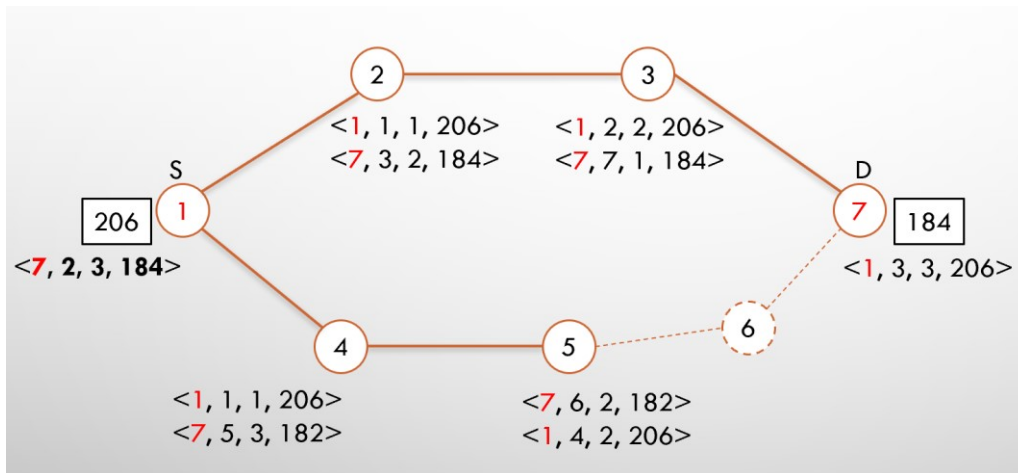
7) Mobile networks



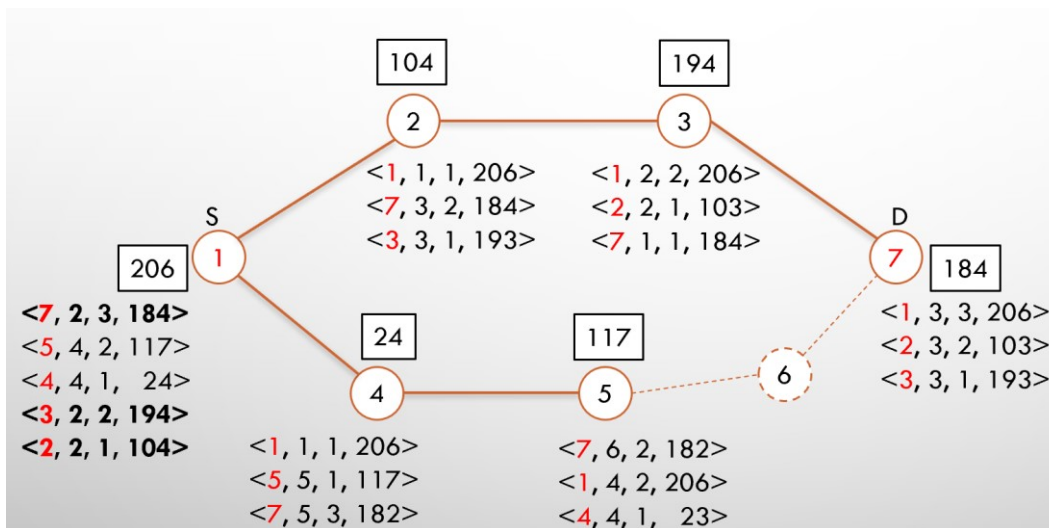
8) DSR



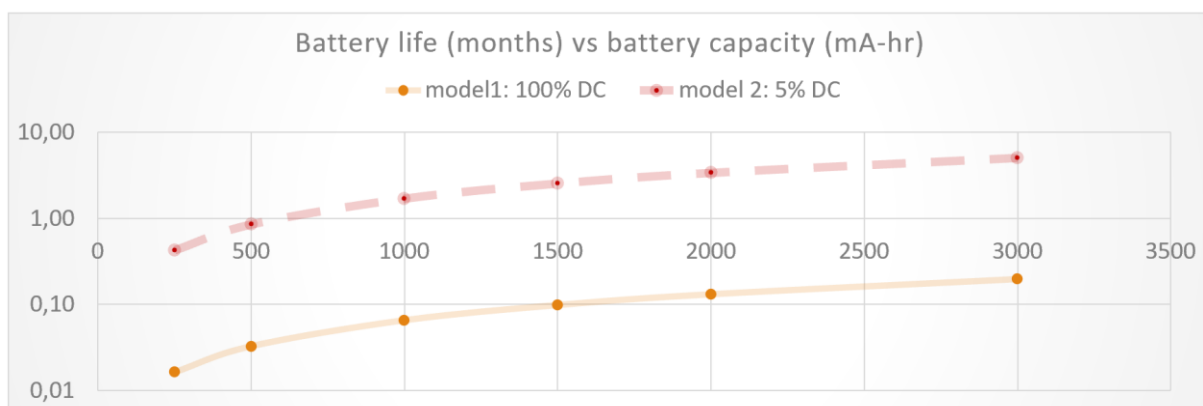
9) AODV



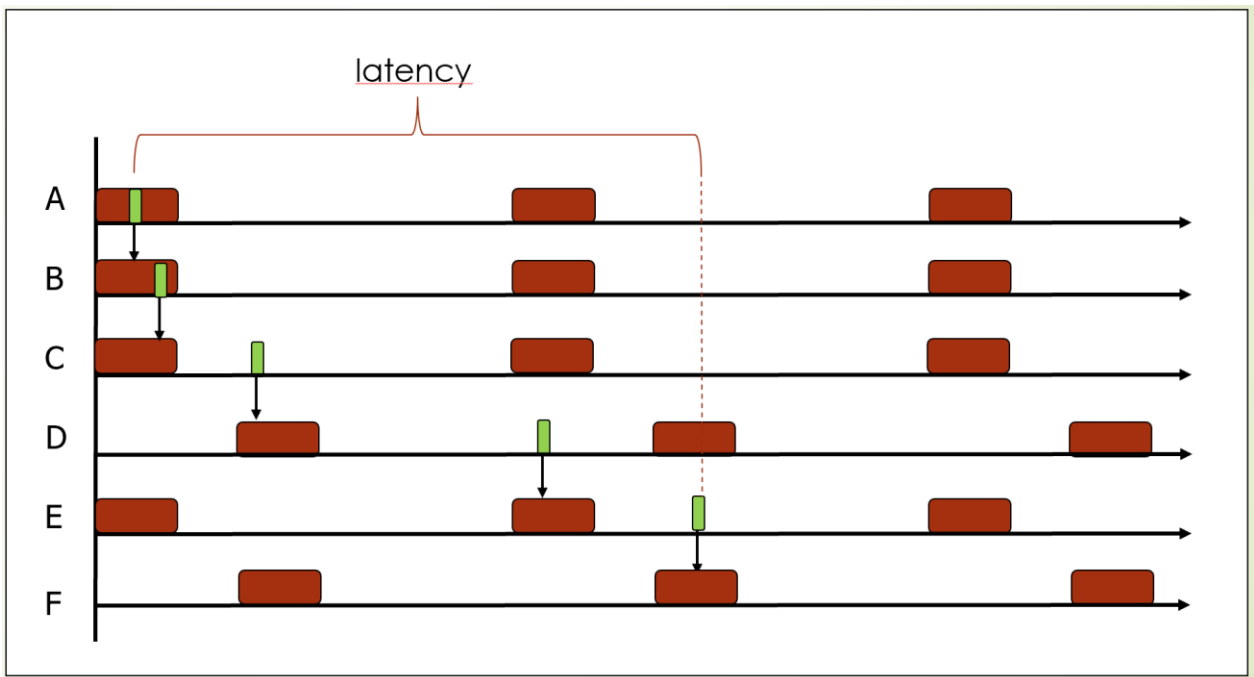
10) DYMO



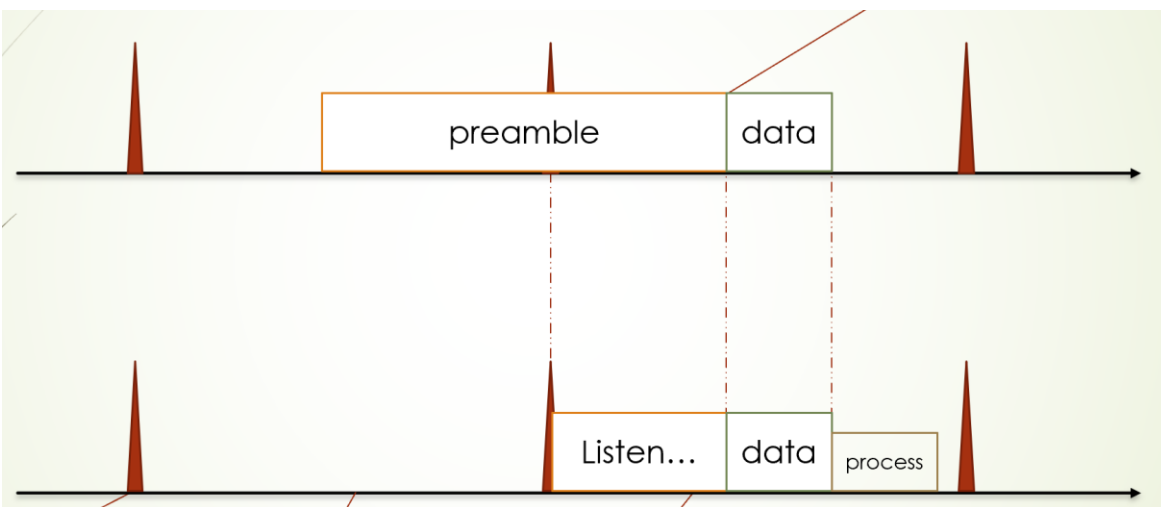
11) duty cycle



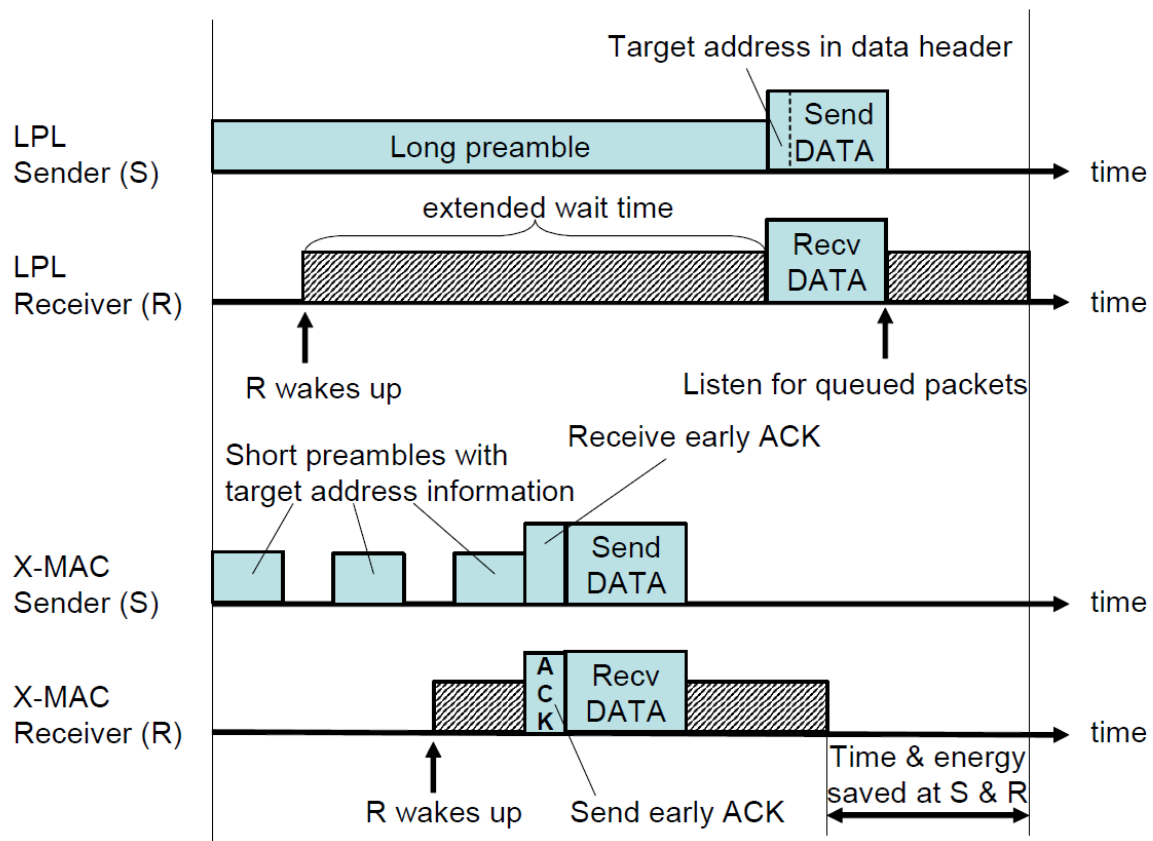
12) SMAC



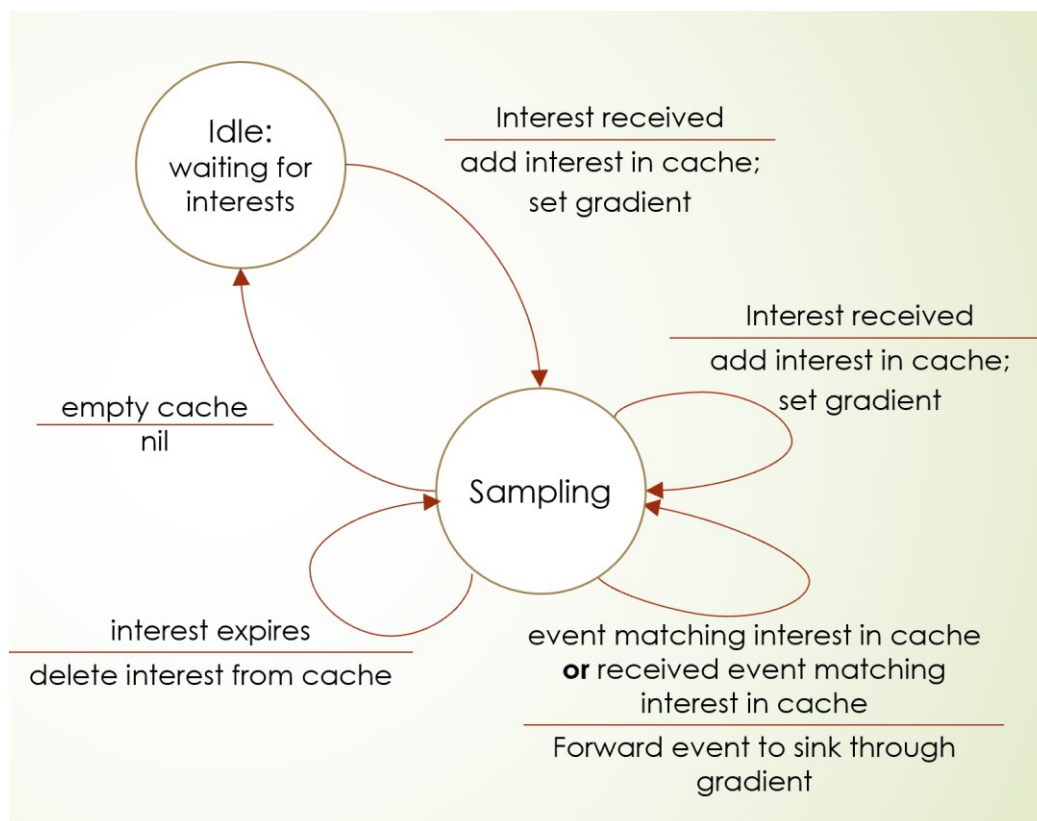
13) BMAC



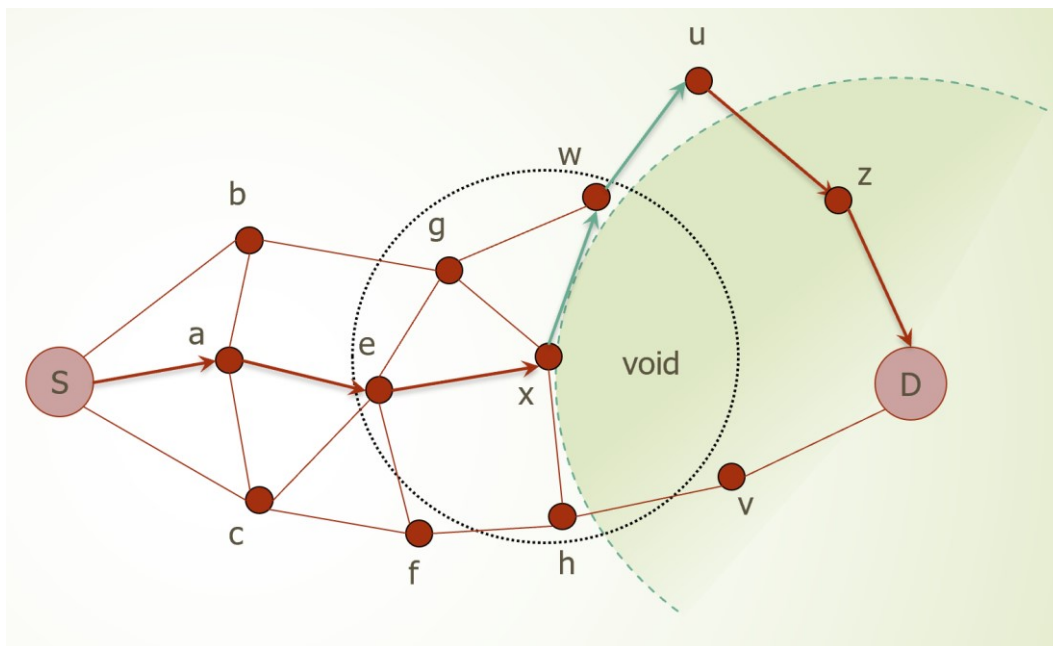
14) X-MAC/B-MAC



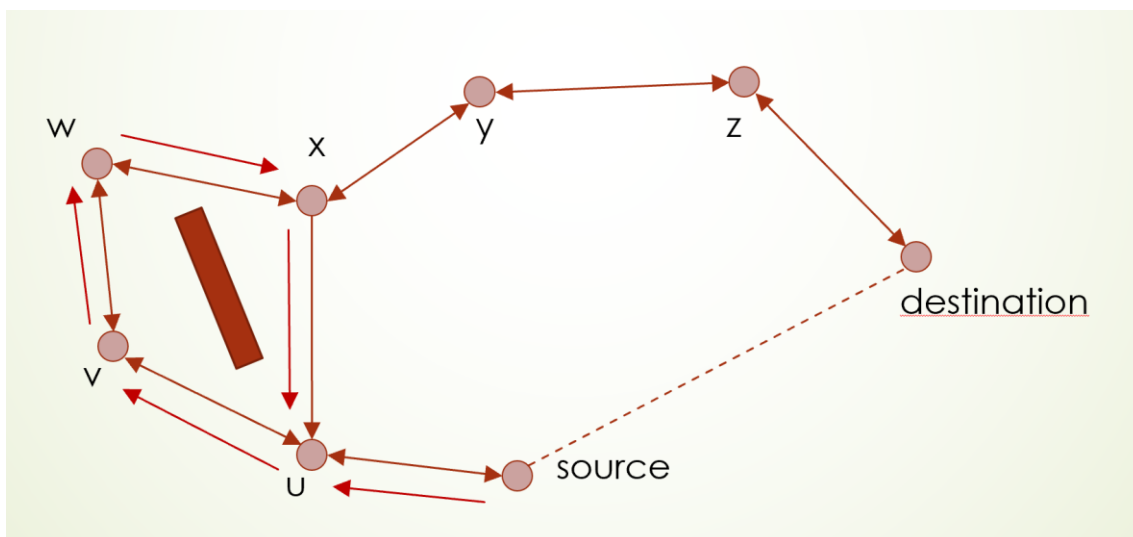
15) Directed Diffusion



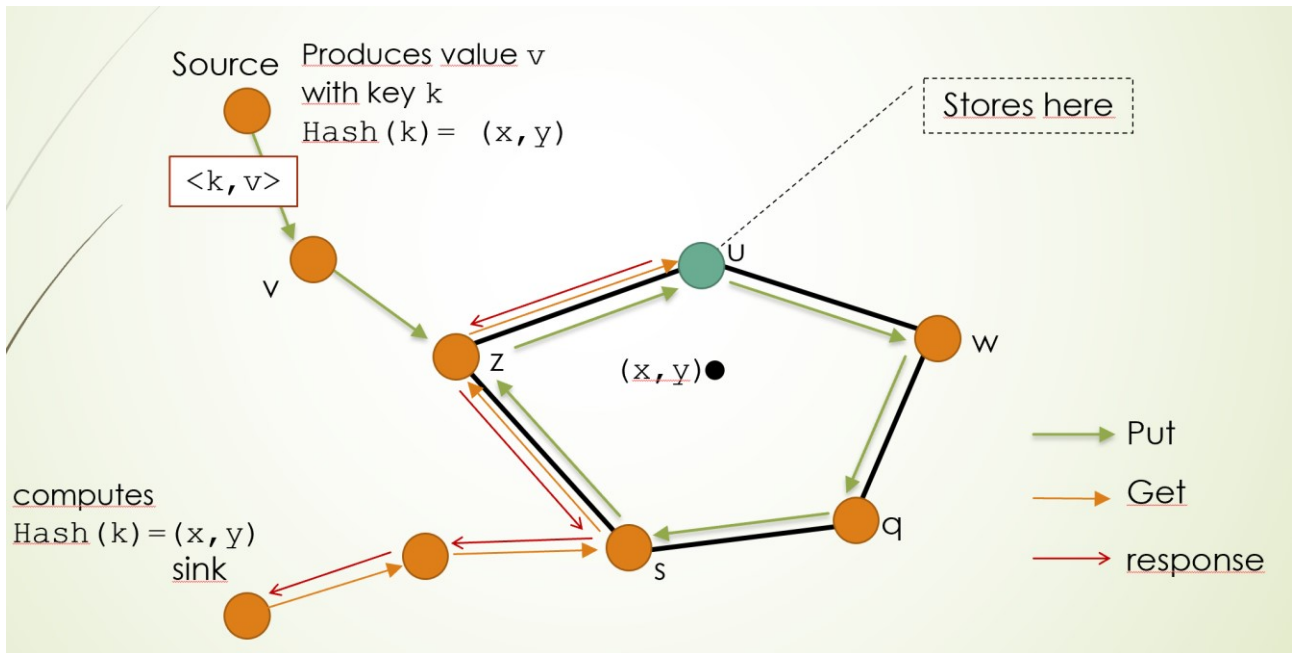
16) GPSR



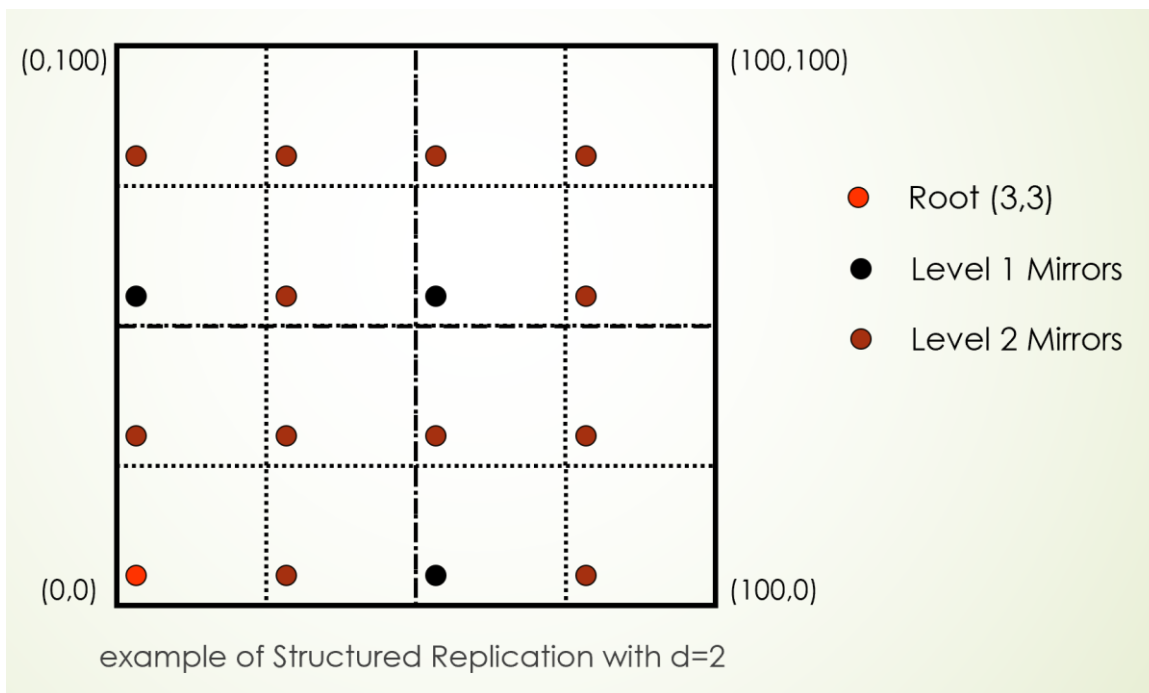
17) GPSR



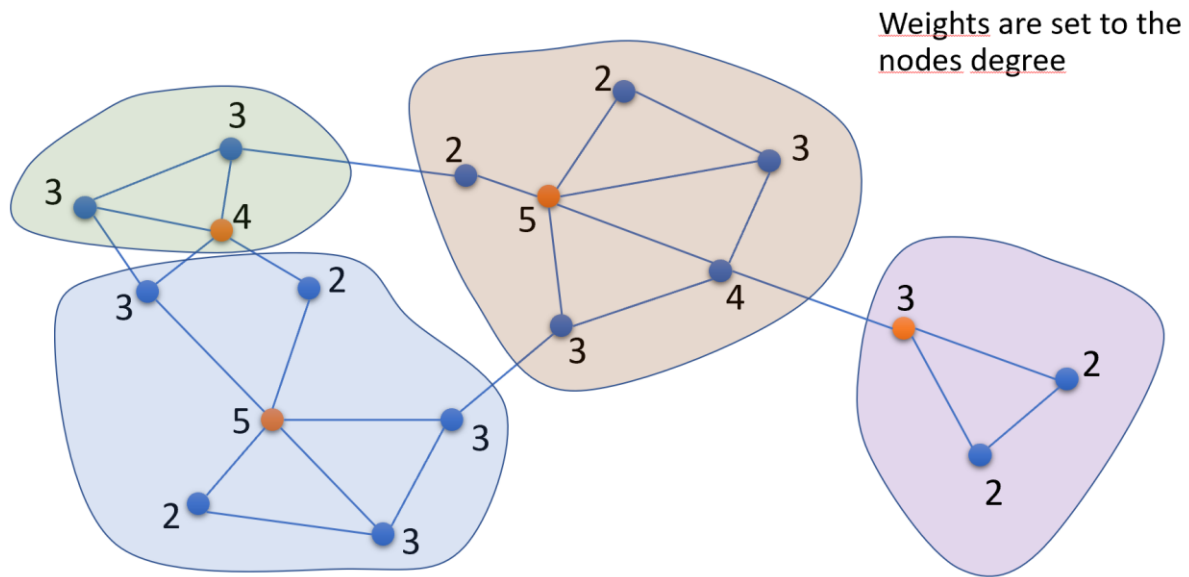
18) DCS-GHT



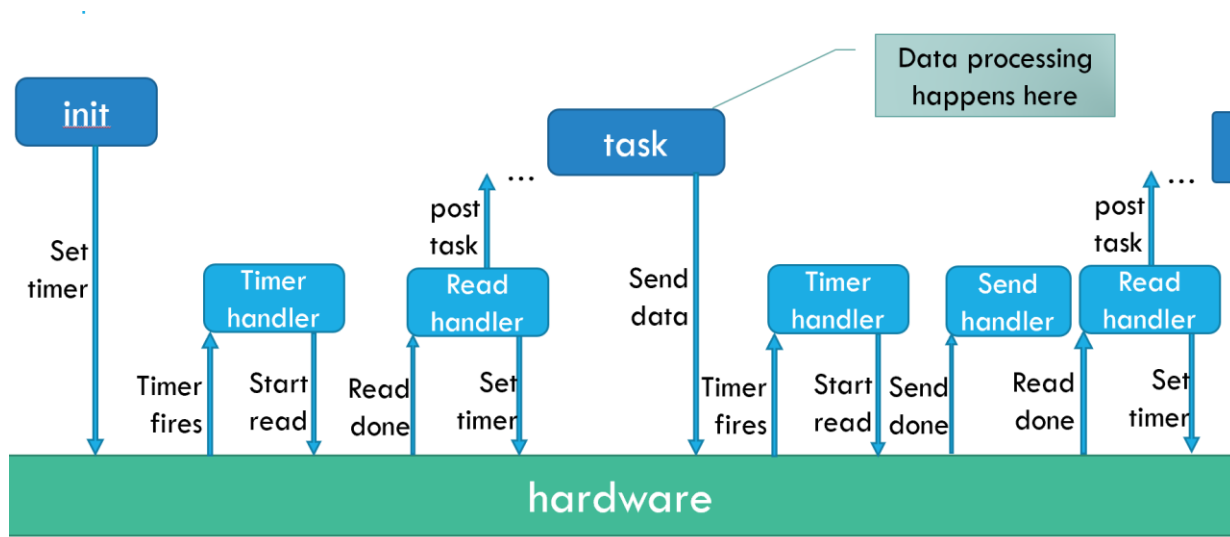
19) DCS-GHT



20) DMAC

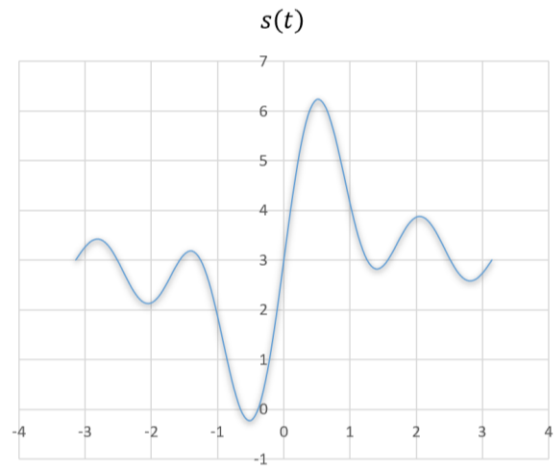
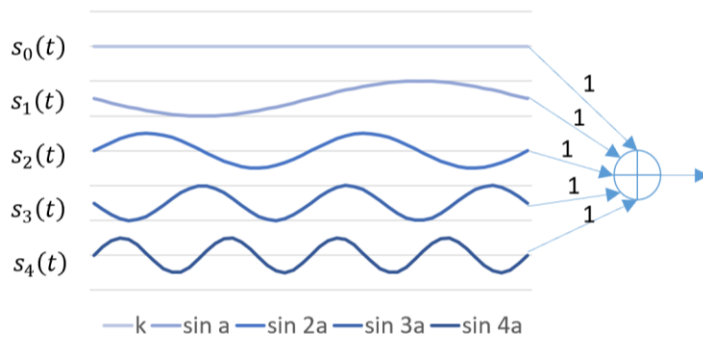


21) embedded programming



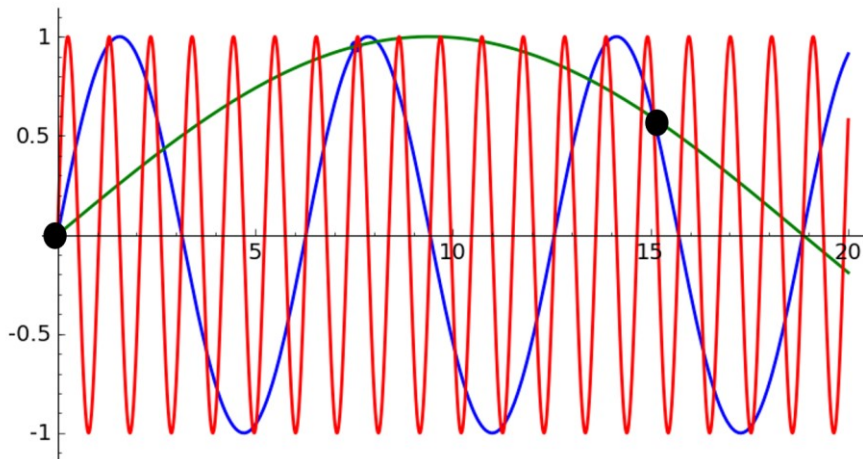
21) Fourier series

$$\frac{1}{2}a_0 + \sum_{n=1}^{\infty} (a_n \cos nt + b_n \sin nt)$$

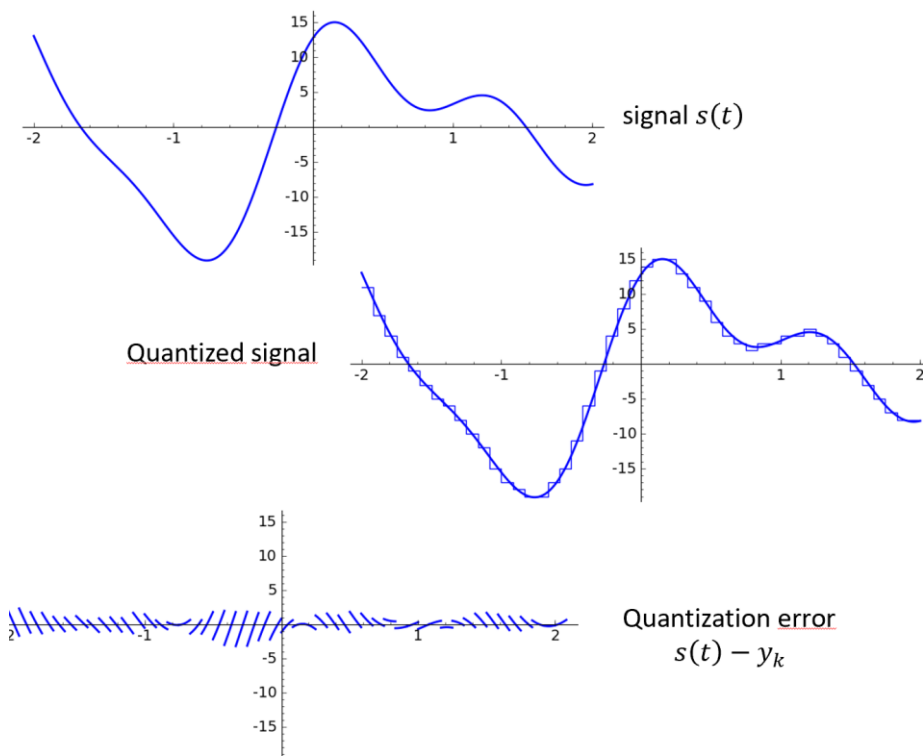


- $s_0(t)$: continuous signal (frequency 0)
- $s_1(t)$: fundamental (frequency $f_0 = 1/T$)
- $s_2(t)$: first harmonic (frequency $f_1 = 2/T = 2f_0$)
- $s_3(t)$: second harmonic (frequency $f_2 = 3/T = 3f_0$)
- $s_4(t)$: third harmonic (frequency $f_3 = 4/T = 4f_0$)

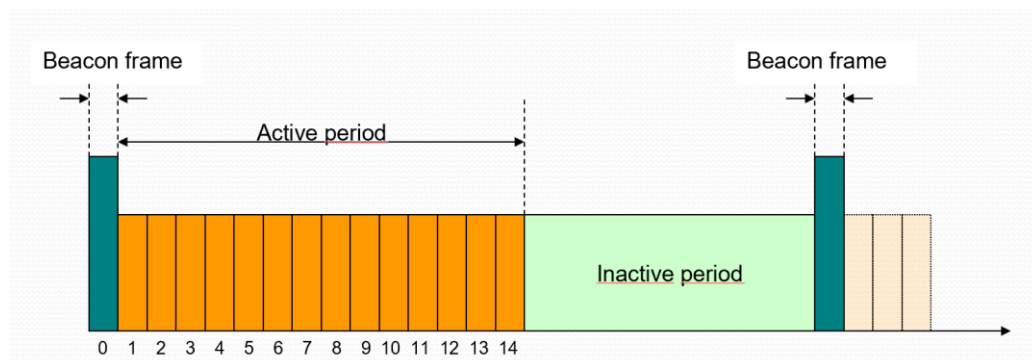
22) sampling and aliasing



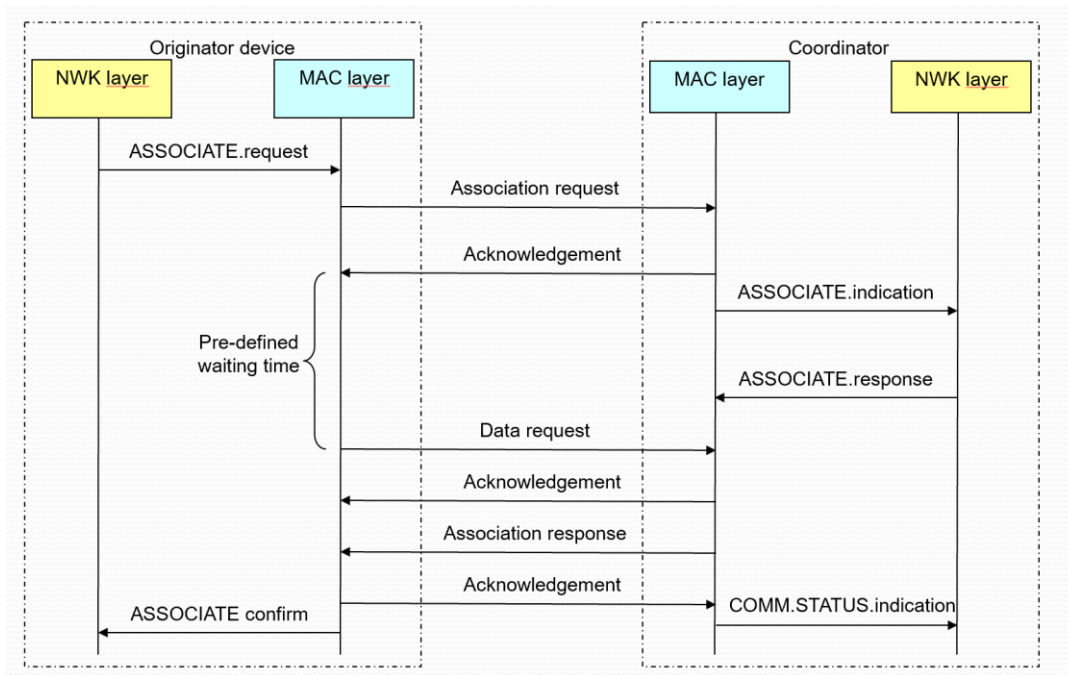
23) quantization



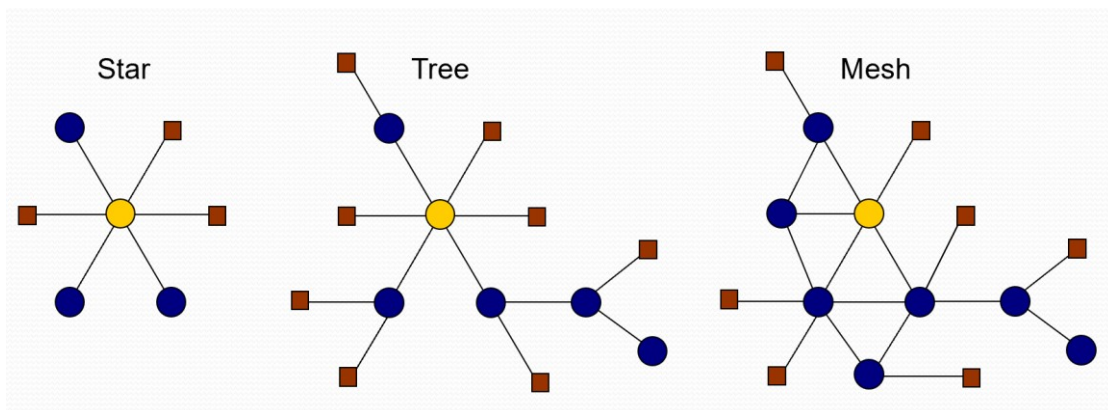
24) IEEE 802.15.4



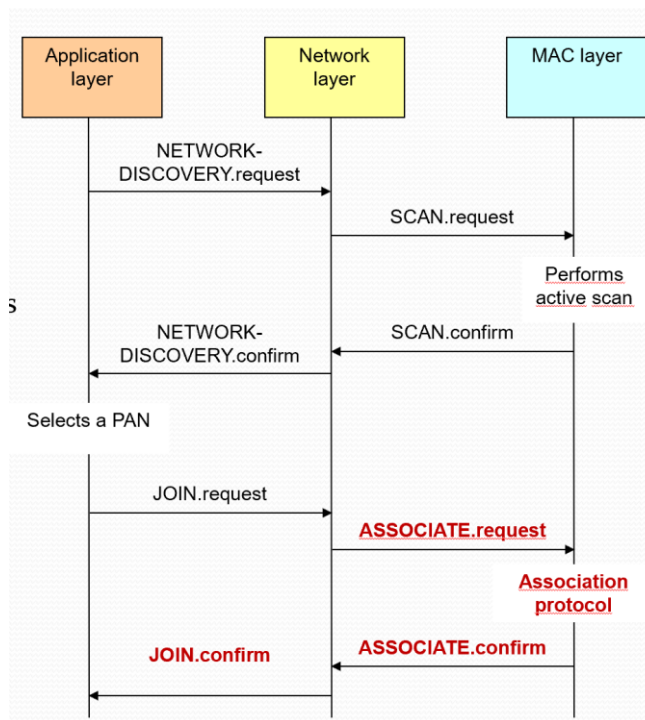
25) IEEE 802.15.4



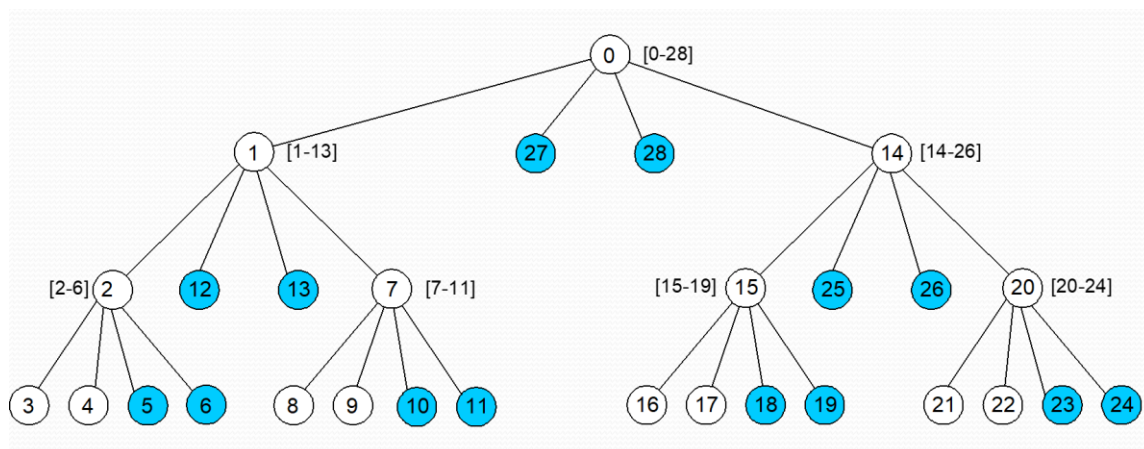
26) zigbee



27) ZigBee



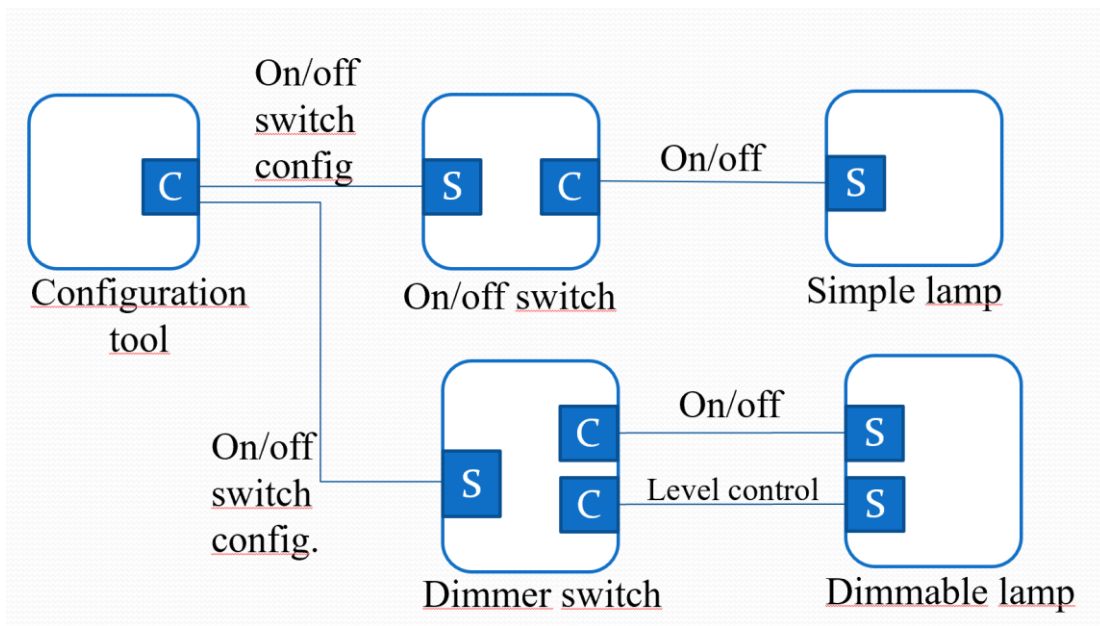
28) Zigbee



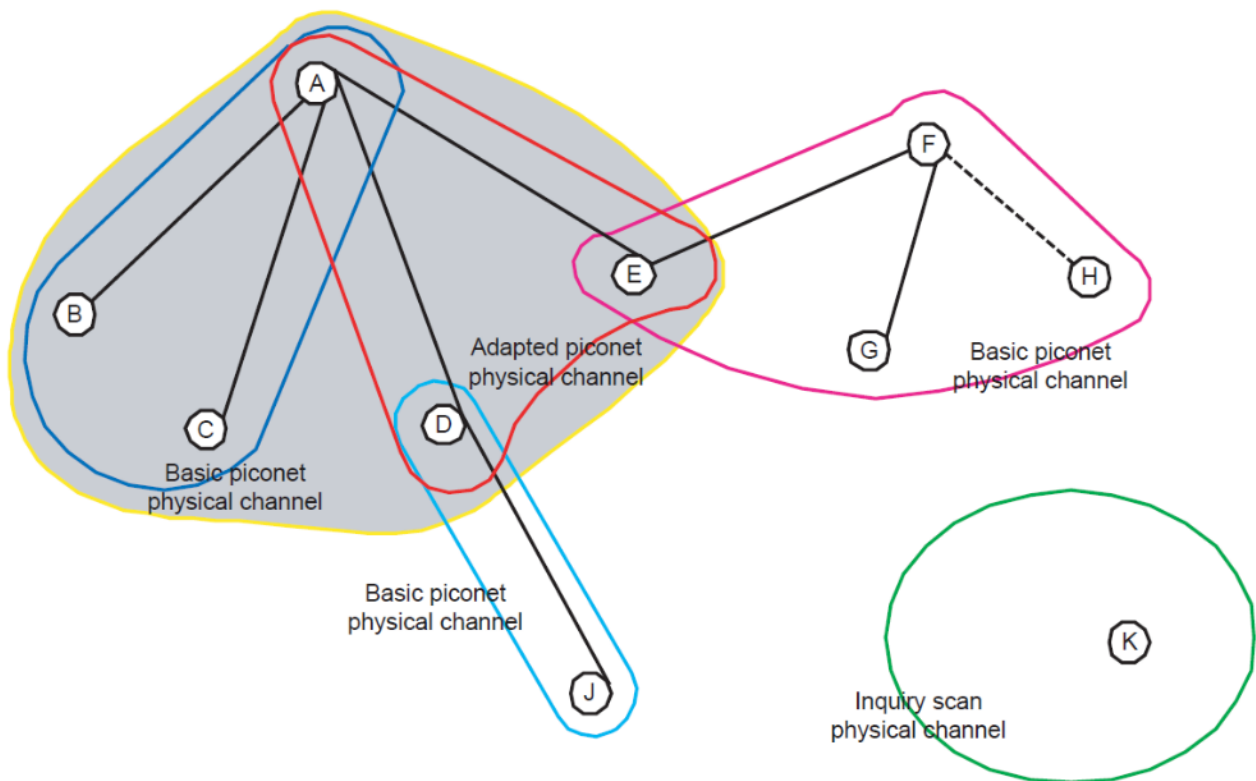
29) Zigbee-Binding

| Src Addr (64 bits) | Src EP | Cluster ID | Dest Addr (16/64 bits) | Addr/Grp | Dest EP |
|-----------------------|--------|------------|---------------------------|----------|---------|
| 0x3232... | 5 | 0x0006 | 0x1234... | A | 12 |
| 0x3232... | 6 | 0x0006 | 0x796F... | A | 240 |
| 0x3232... | 5 | 0x0006 | 0x9999 | G | — |
| 0x3232... | 5 | 0x0006 | 0x5678... | A | 44 |

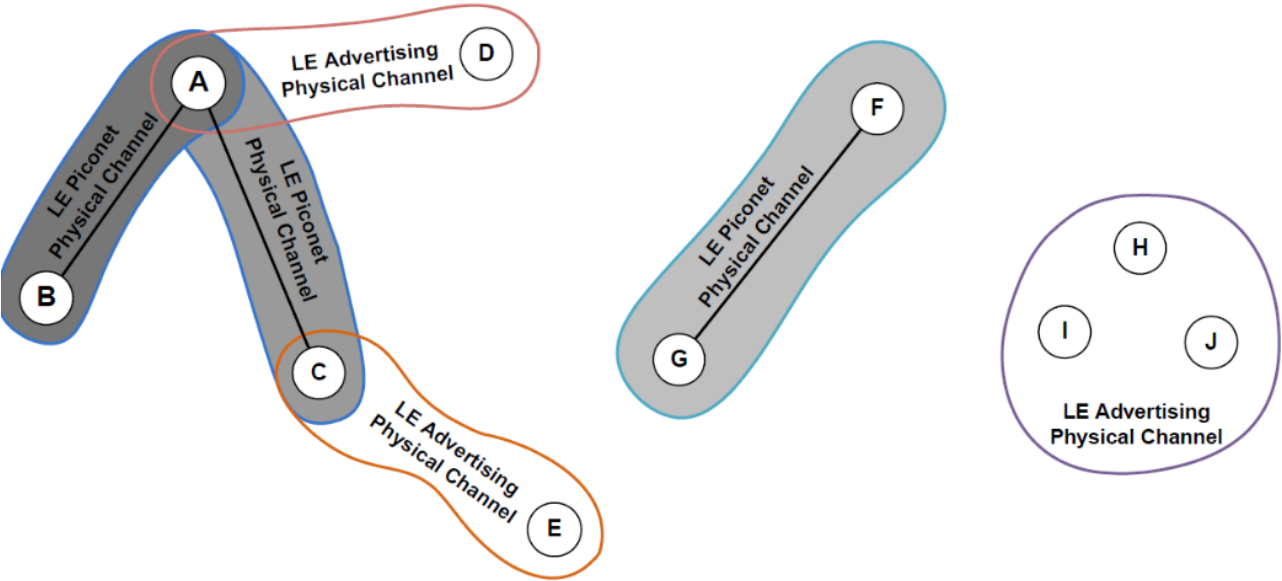
30) Zigbee cluster library



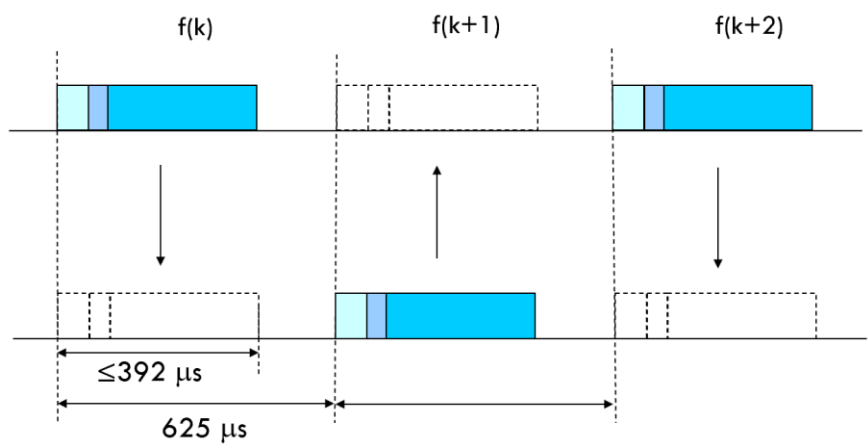
31) Bluetooth



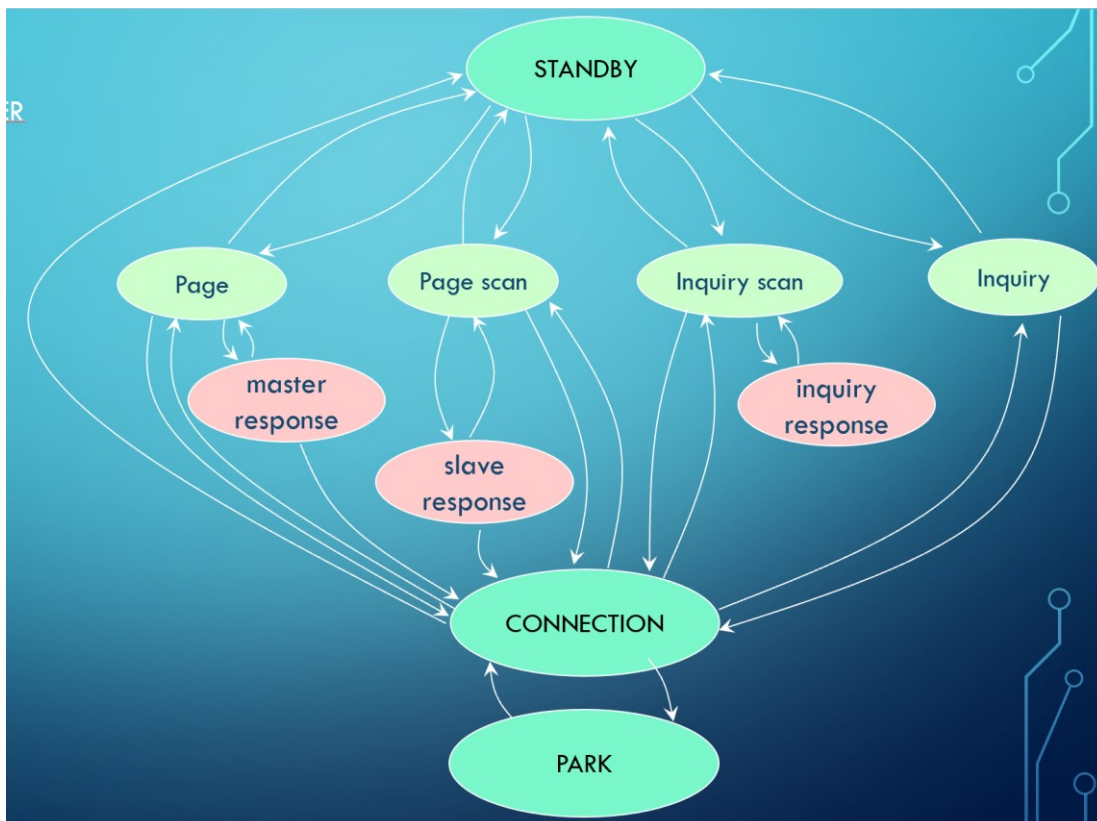
32) Bluetooth



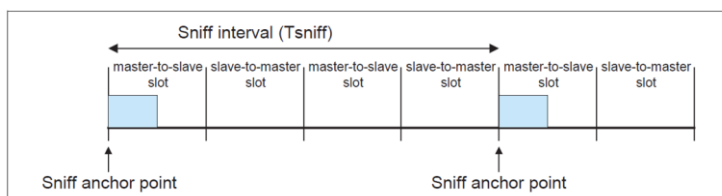
33) Bluetooth



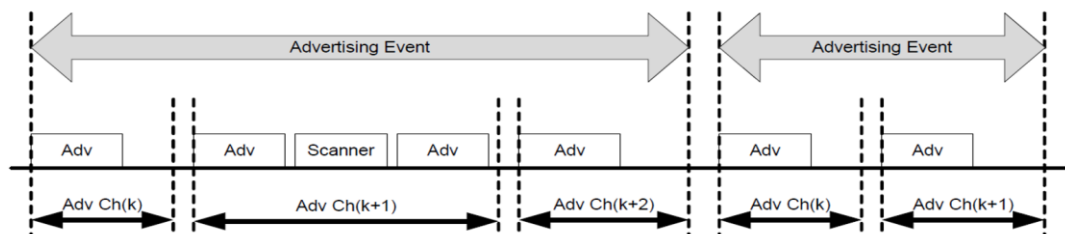
34) Bluetooth



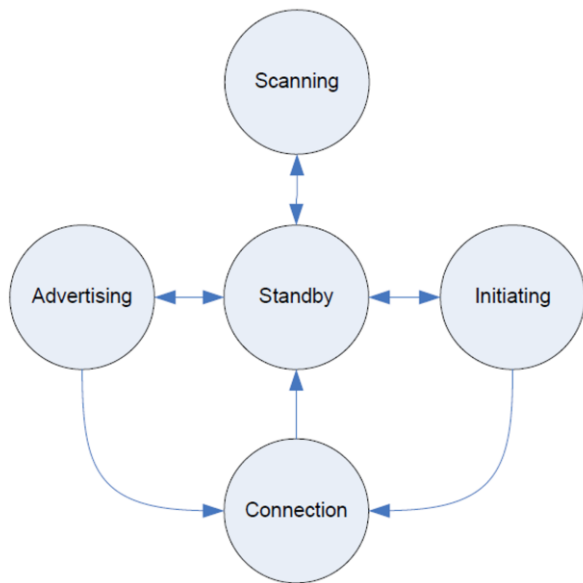
35) Bluetooth – Sniff mode



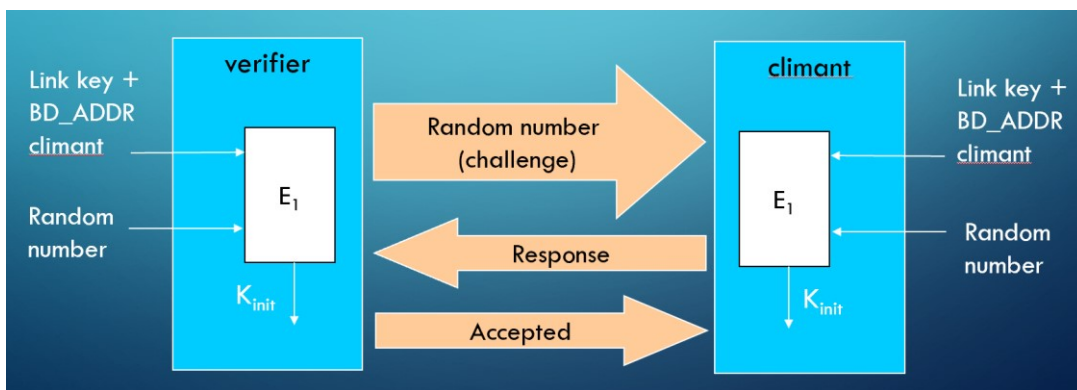
36) Bluetooth Low energy



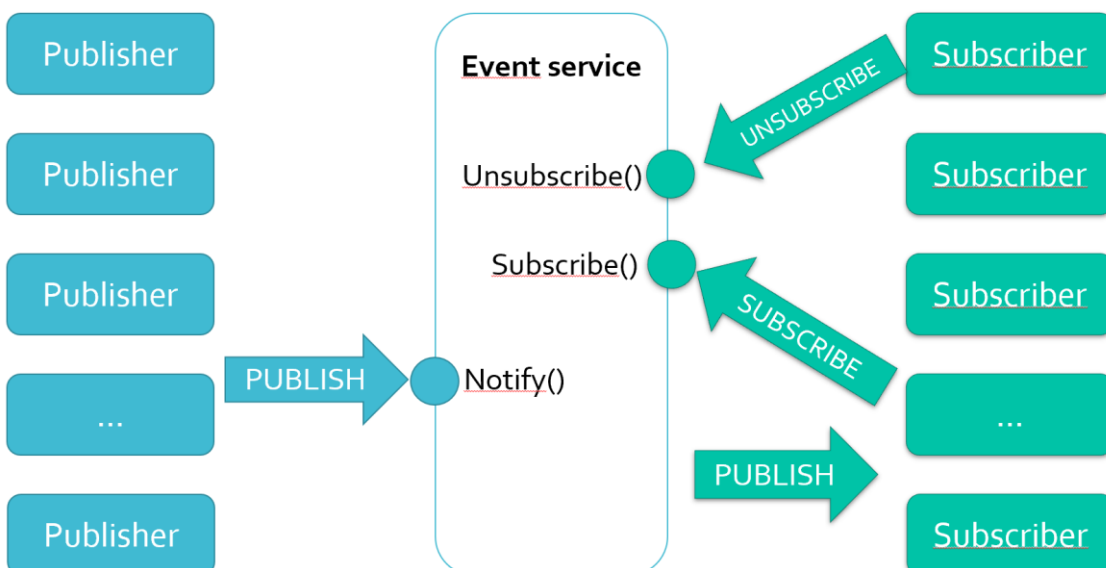
37) Bluetooth



38) bluetooth



39) Publish/subscribe & MQTT



40) indoor localization – fingerprinting

