Wireless Systems Security

EE/NiS/TM-584-A/WS

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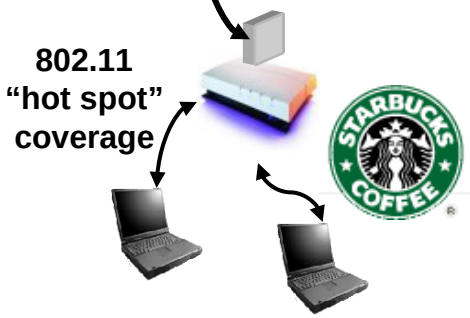
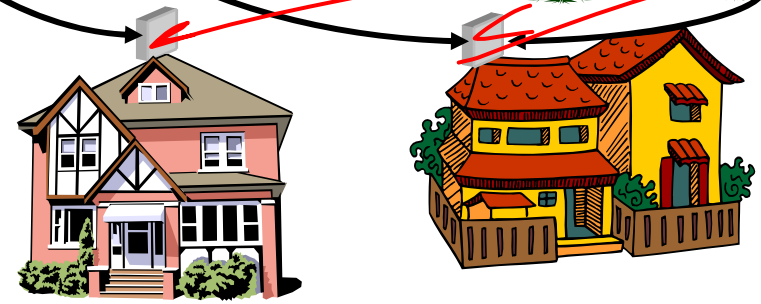
Week 11

Case Study 7

Case 7 – Wireless Metropolitan Area Networks (W-MANs) 802.16

802.16a: 2-11 GHz 256/2048 carrier OFDM,
802.16.1: 10 – 66 GHz LOS
120 Mb/s capacity
T1+ user data, multiple voice channels, Wireless Local Loop
Triple DES encryption of traffic
Single DES encryption of key exchange
Authentication of terminal with X.509 PKI certificates





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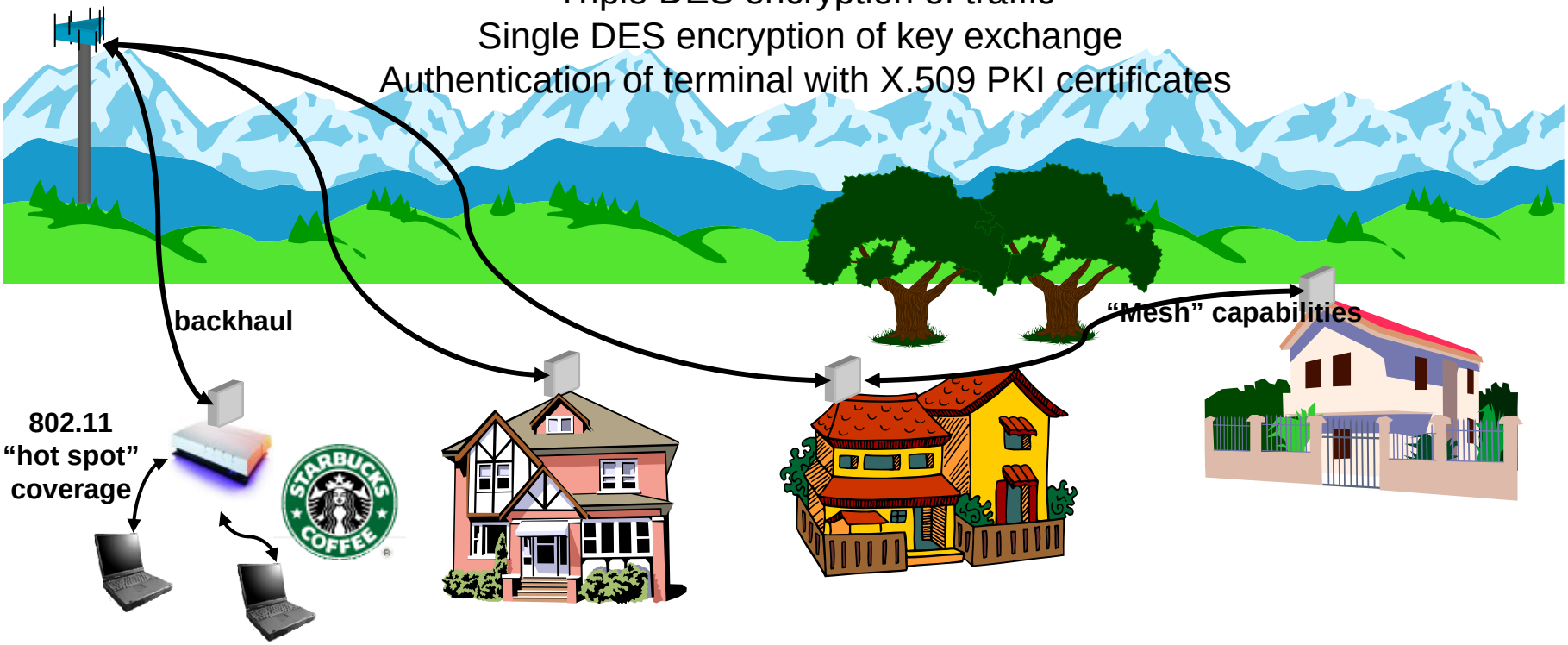
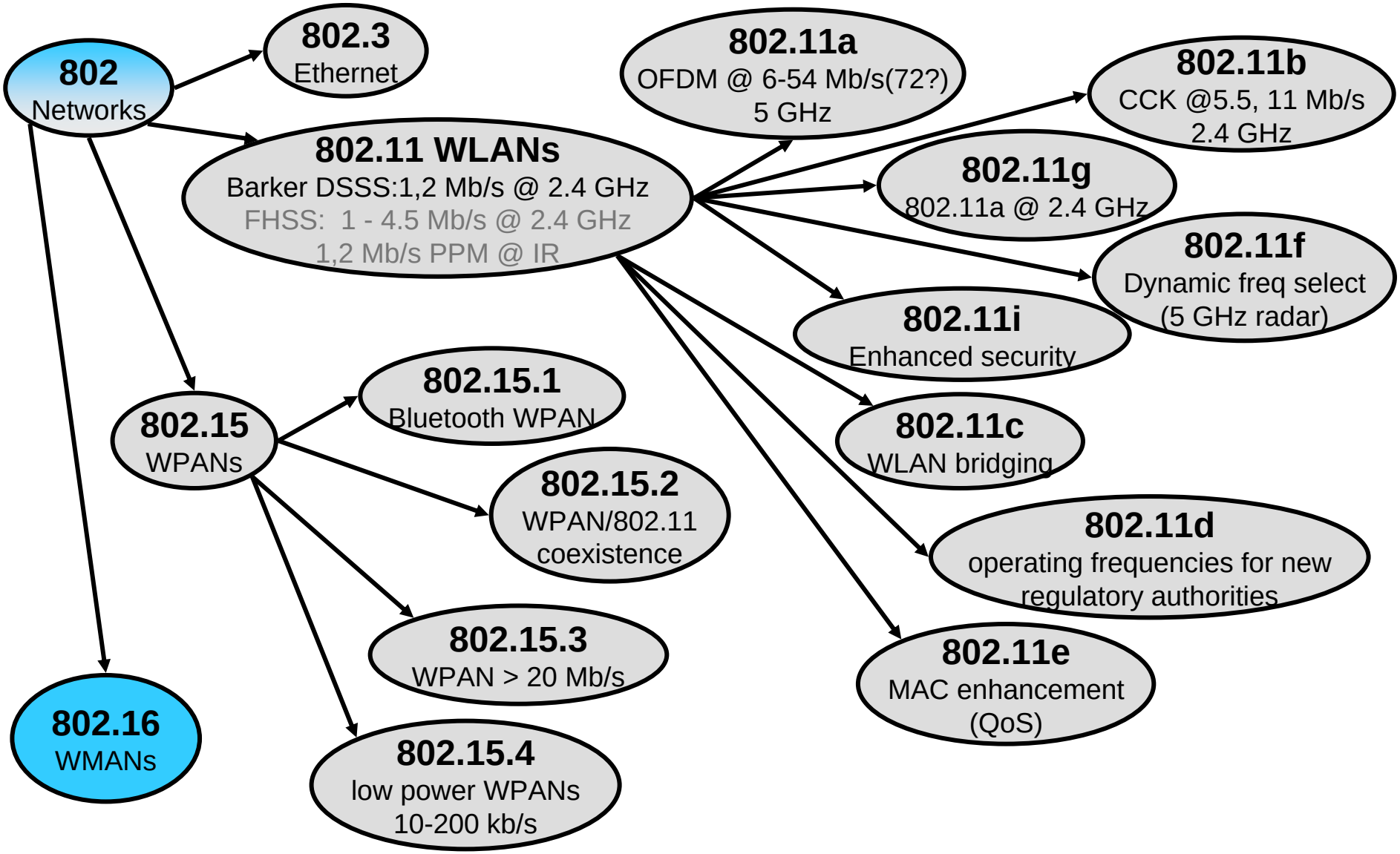
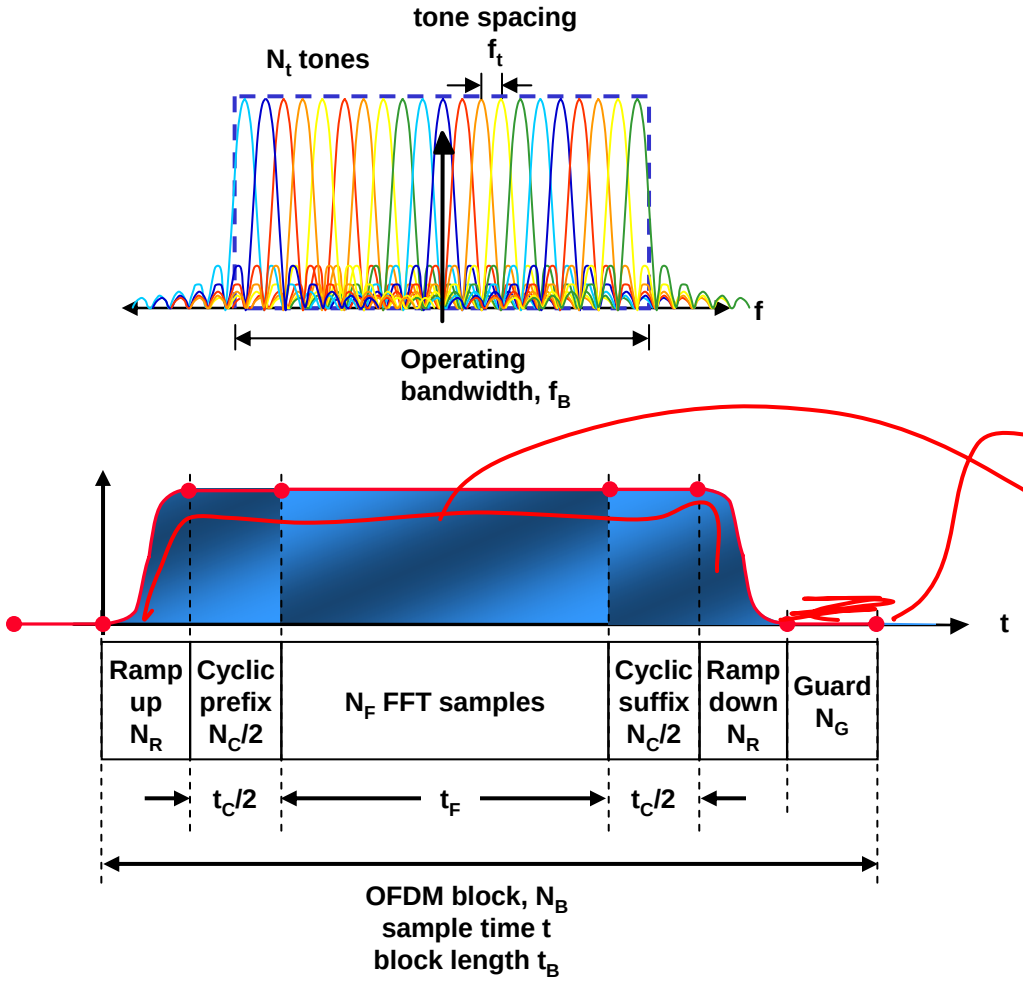


IEEE 802 Standards (Alphabet Soup)



OFDM Basics



Total bandwidth $f_B = N_t f_t$

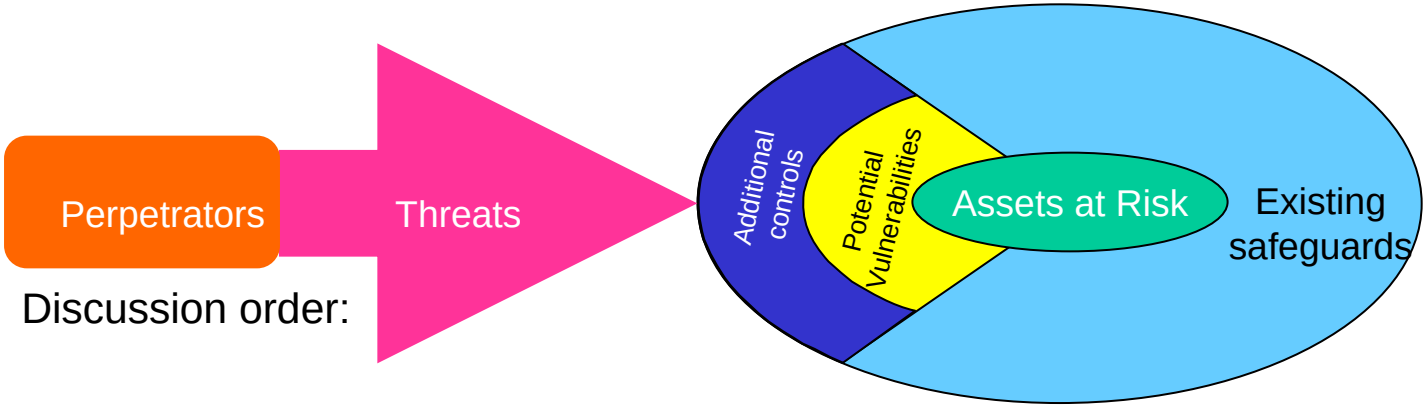
Tone spacing vs active block time $f_t = \frac{1}{t_F}$

$N_B = 2N_R + N_C + N_G + N_F$

Block efficiency $\eta = \frac{N_F}{N_B} = \frac{N_F}{N_F + N_C + 2N_R + N_G}$

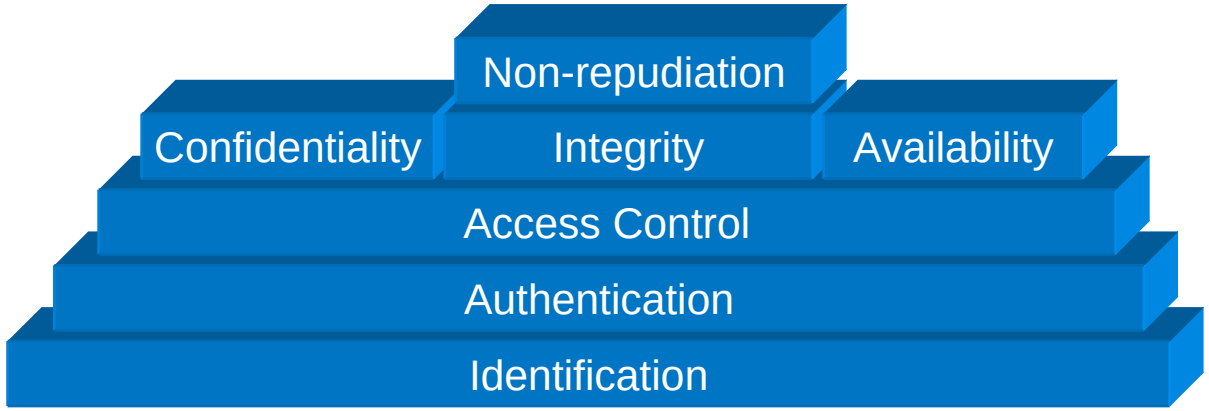
Tolerance to delay spread $\approx t_C \propto N_C$

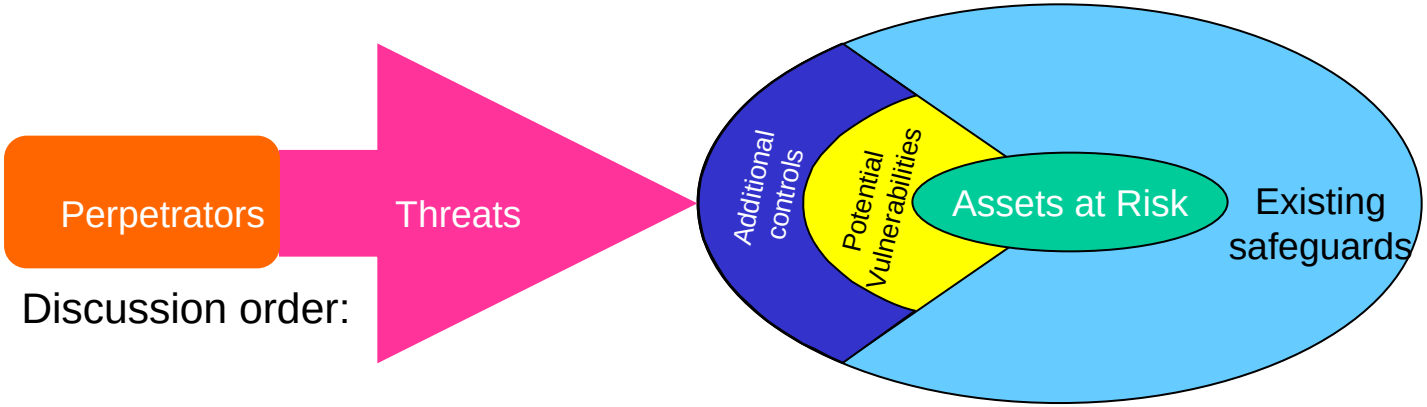
Raw capacity for M-ary tone modulation $N_t M$



Discussion order:

- Assets
- Perpetrators
- Threats
- Existing Safeguards
- Potential Vulnerabilities
- Additional Security Controls





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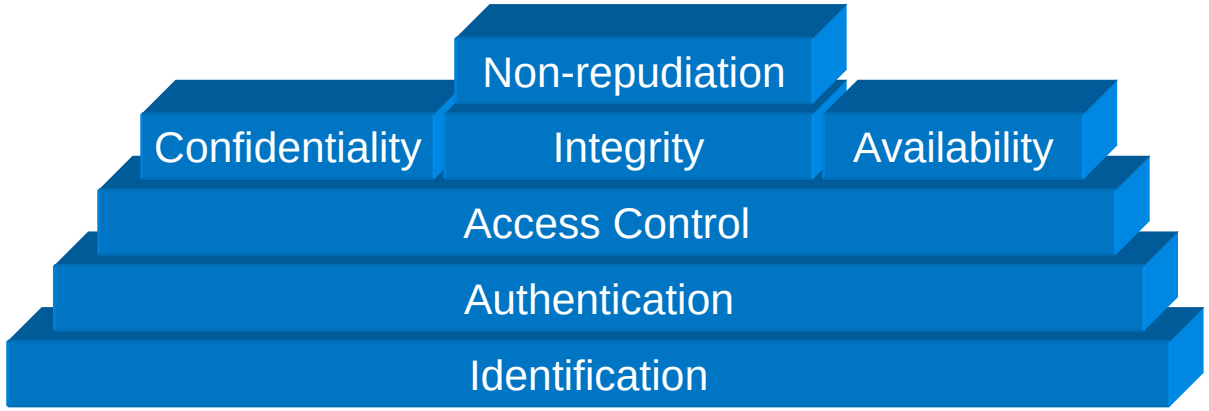

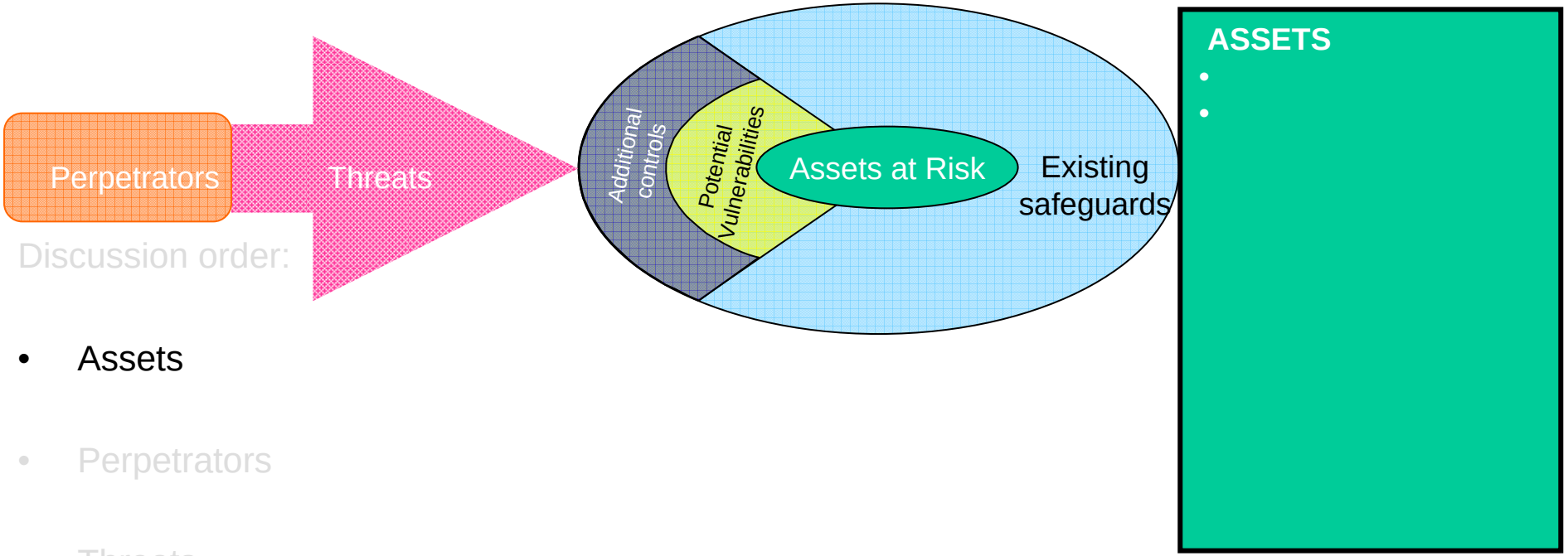

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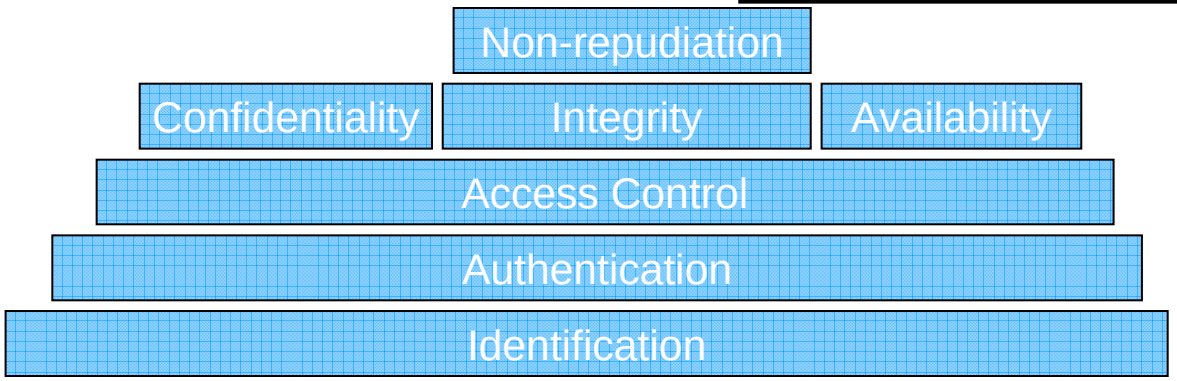

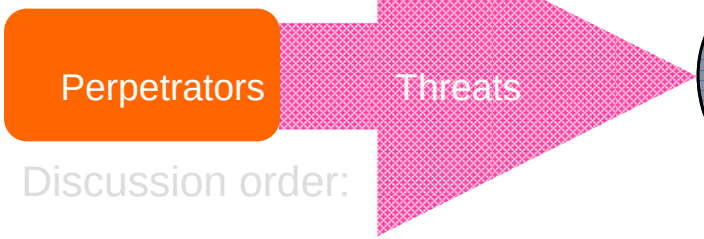

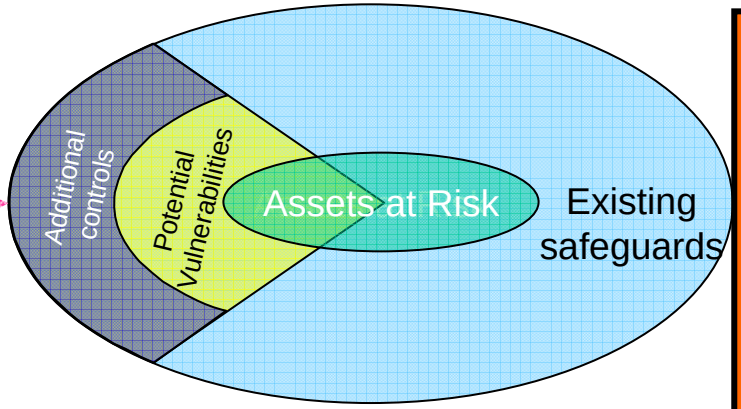

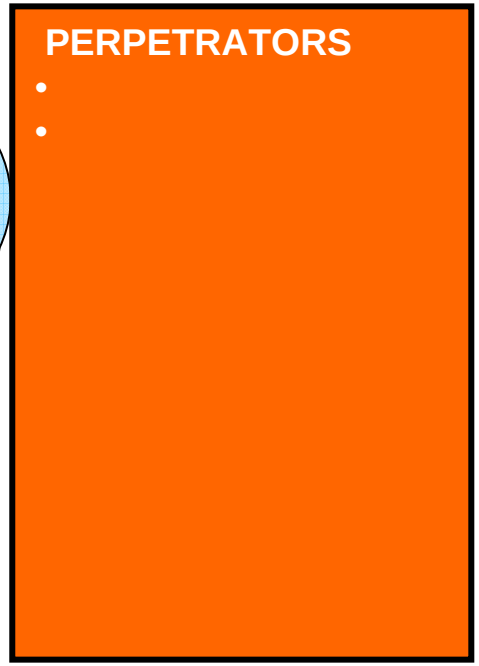

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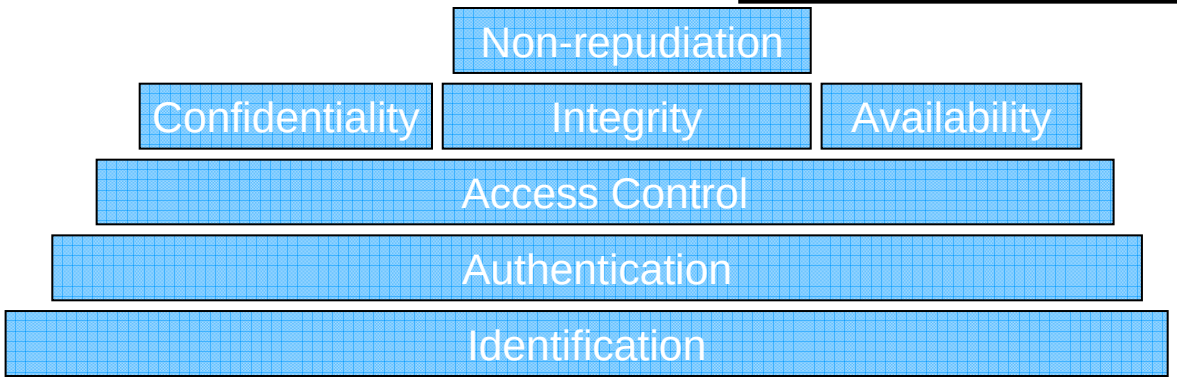

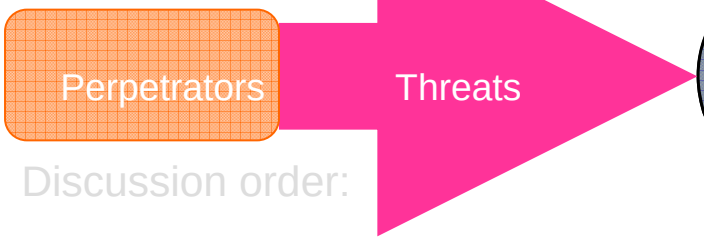

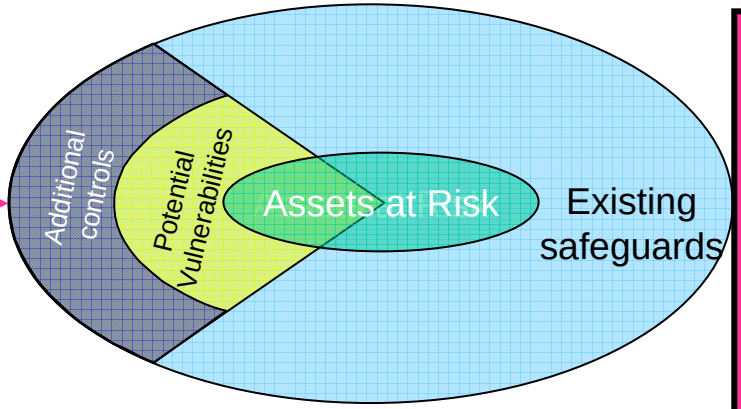

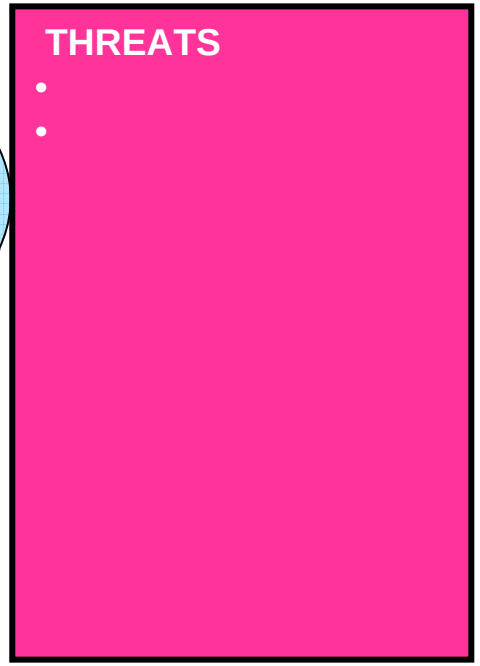

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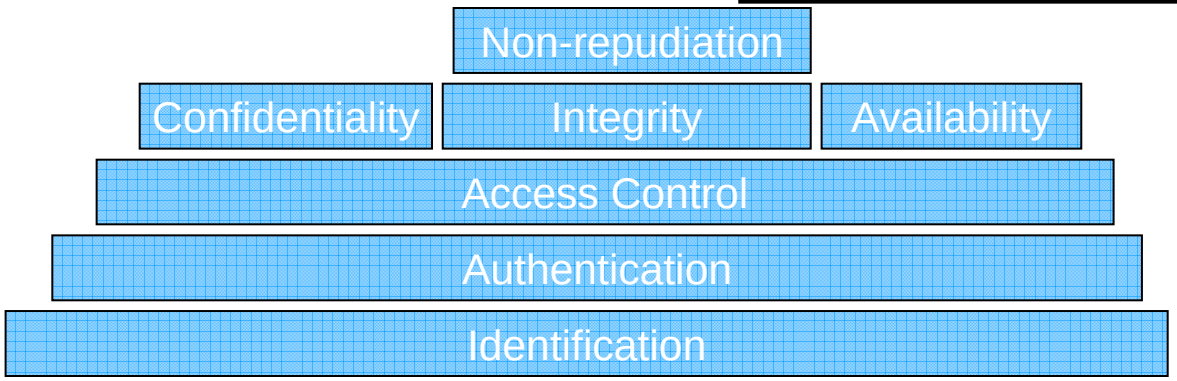

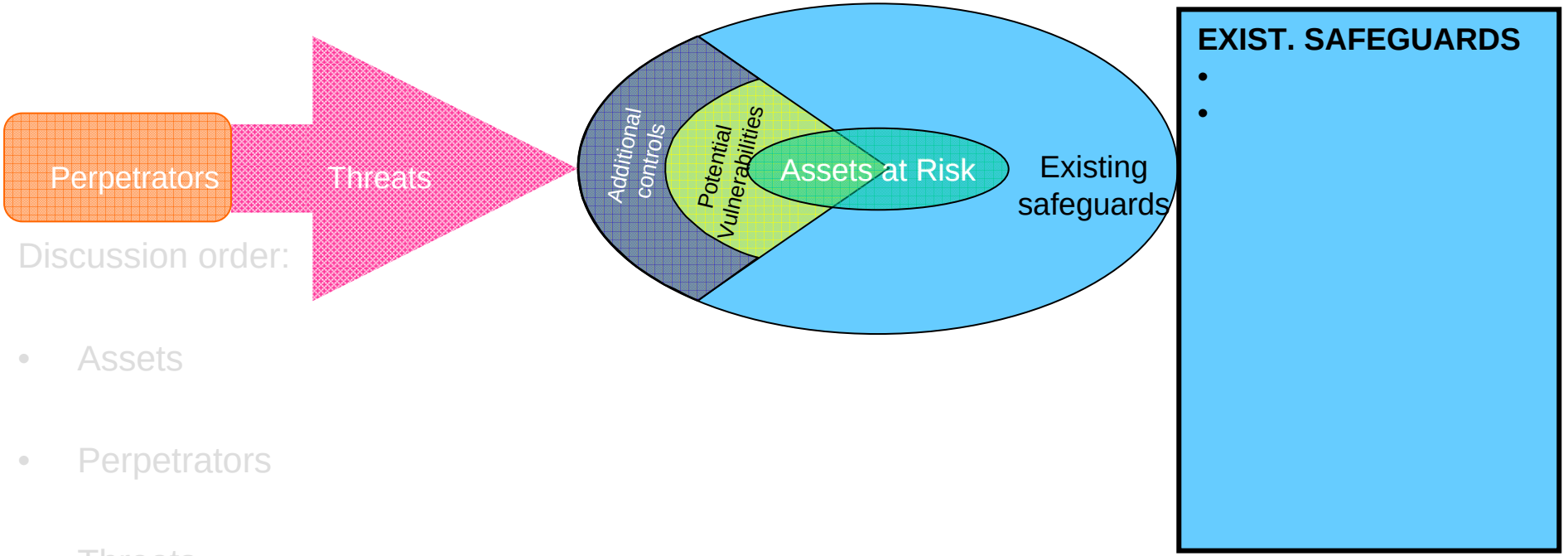

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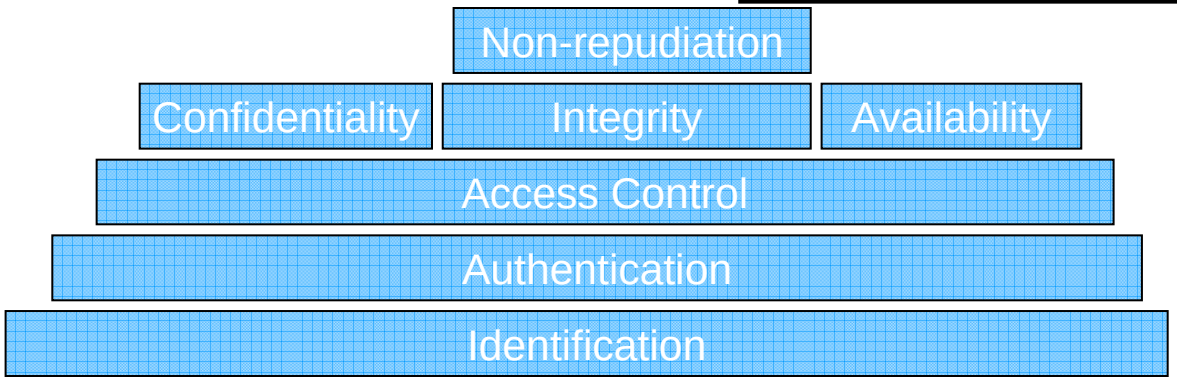

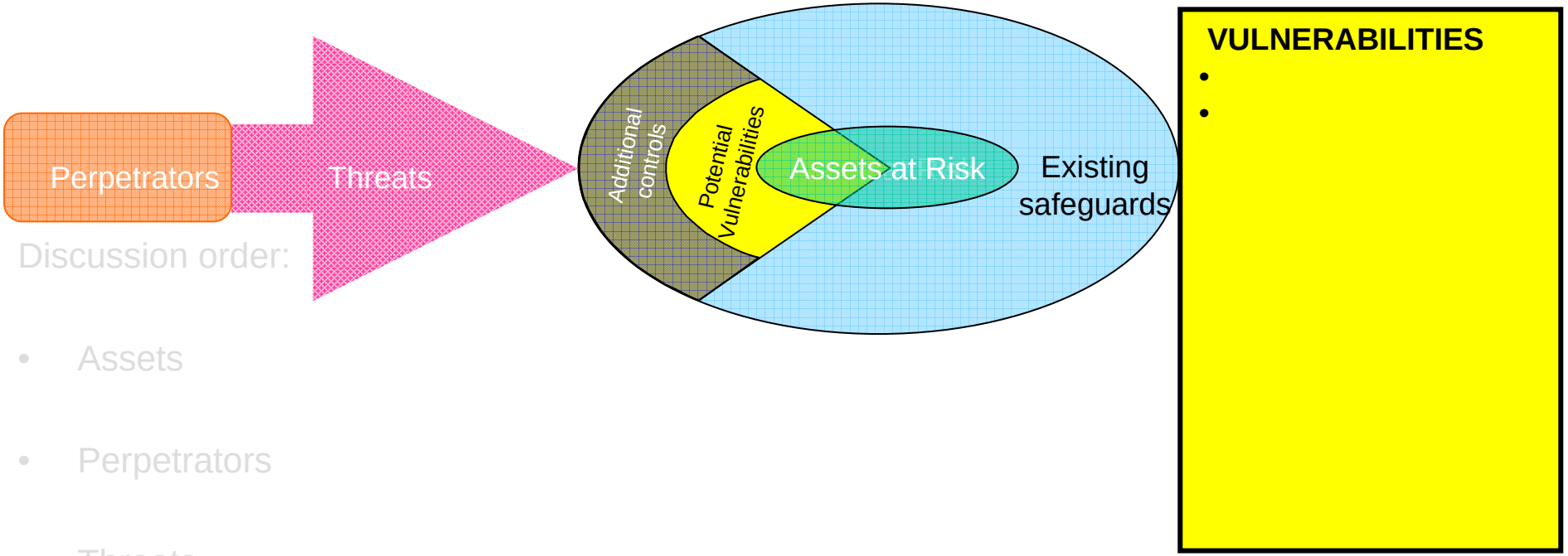

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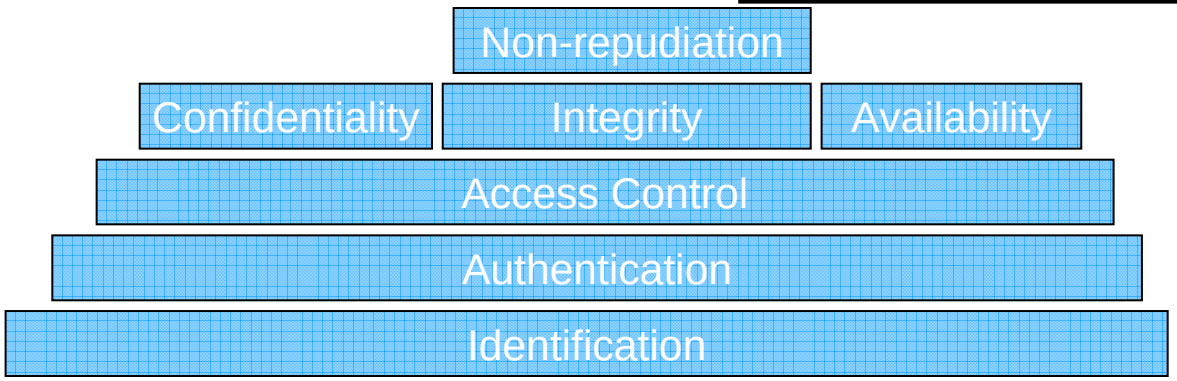

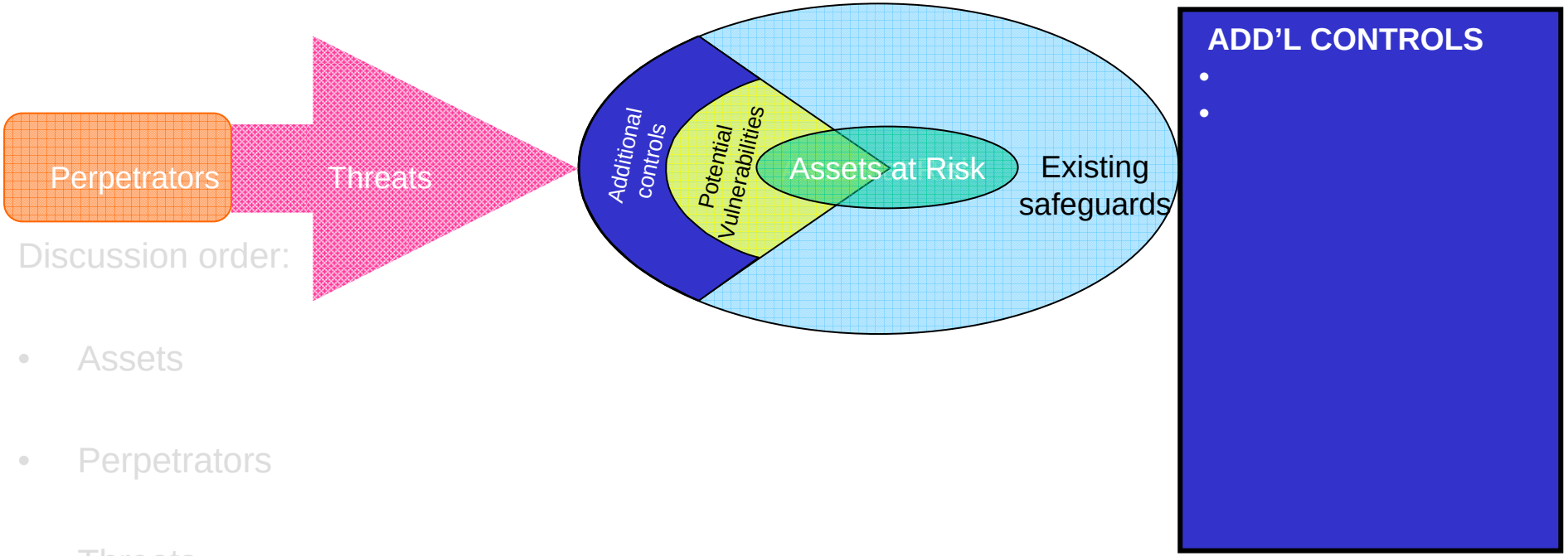

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