

Device-To-Device (D2D) Communication in 5G Cellular Networks

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Cellular Network Evolution



5G Key Enabling Technologies



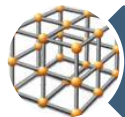
Network Models



Research Perspective



User & Operator Perspective




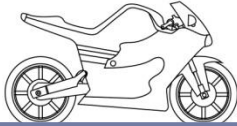
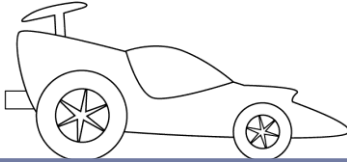
D2D Comm. Framework Proposal



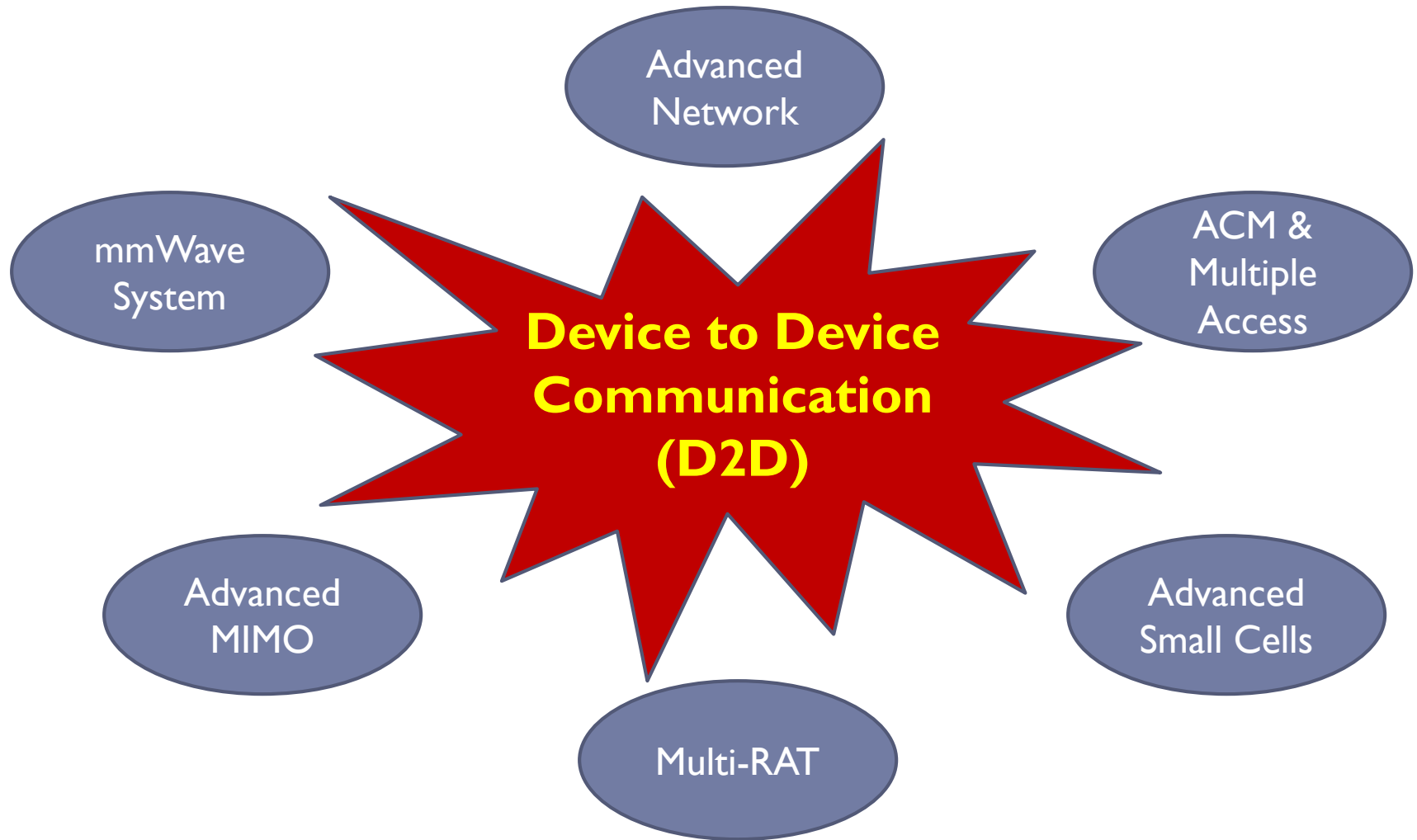
Research Challenges & Trends

Cellular Network Evolution



				
1980s	1991	2002	2009	2020
1G	2G/GSM	3G/UMTS	4G/LTE	5G
(Voice band)	9.6Kbps	384 Kbps	100Mbps	10Gbps

5G Key Enabling Technologies (1/2)



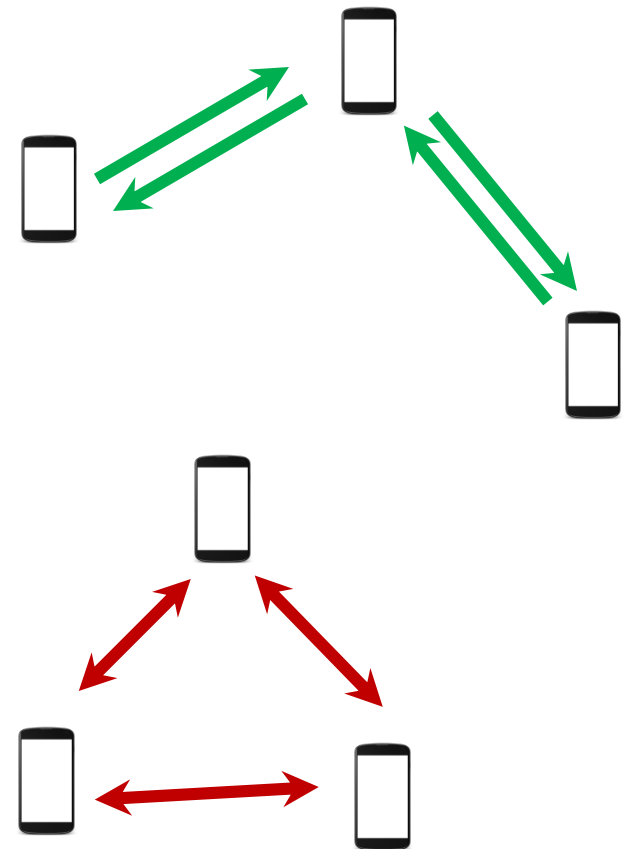
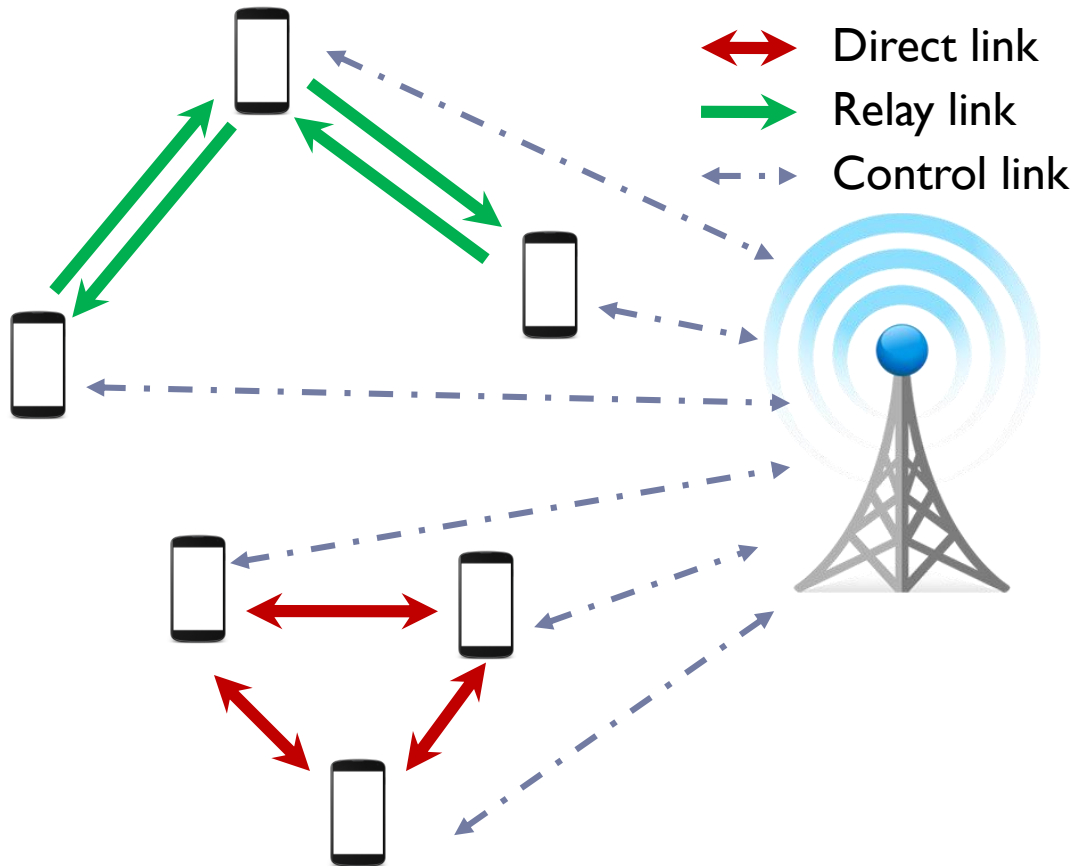
5G Key Enabling Technologies (2/2)

	Peak Data Rate	Cell Edge Data Rate	Cell Spectral Efficiency	Mobility	Energy/ Cost Efficient	Simultaneous Connection	Latency
D2D			☑	☑	☑	☑	☑
mmWave System	☑	☑	☑		☑	☑	☑
Multi-RAT	☑			☑	☑	☑	
Advanced Network				☑	☑	☑	☑
Advanced MIMO		☑	☑		☑	☑	
ACM & Multiple Access		☑	☑			☑	
Advanced Small Cell		☑		☑	☑		

Network Models

Multi-hop Comm. with Operator (MCO)

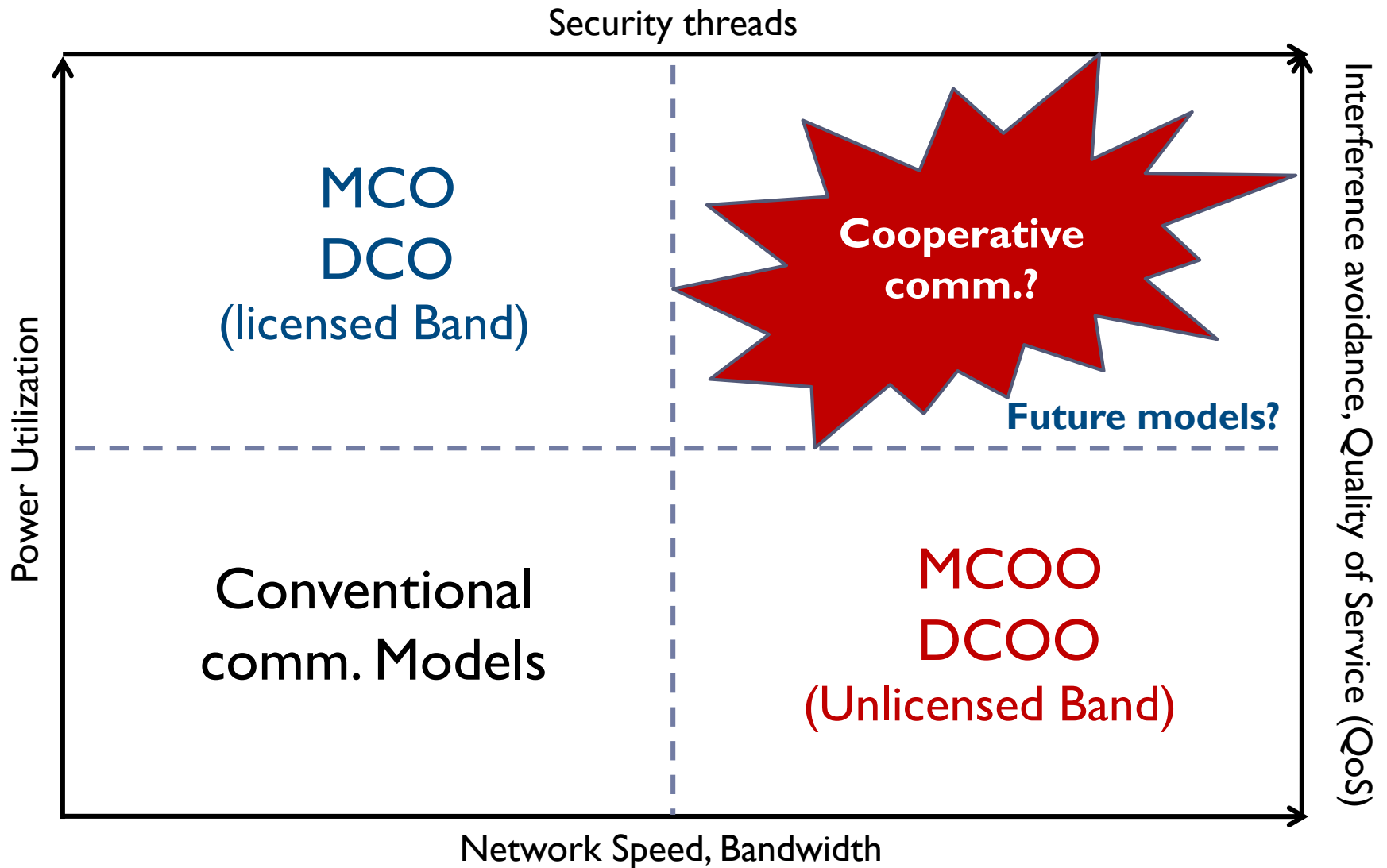
Multi-hop Comm. withOut Operator (MCOO)



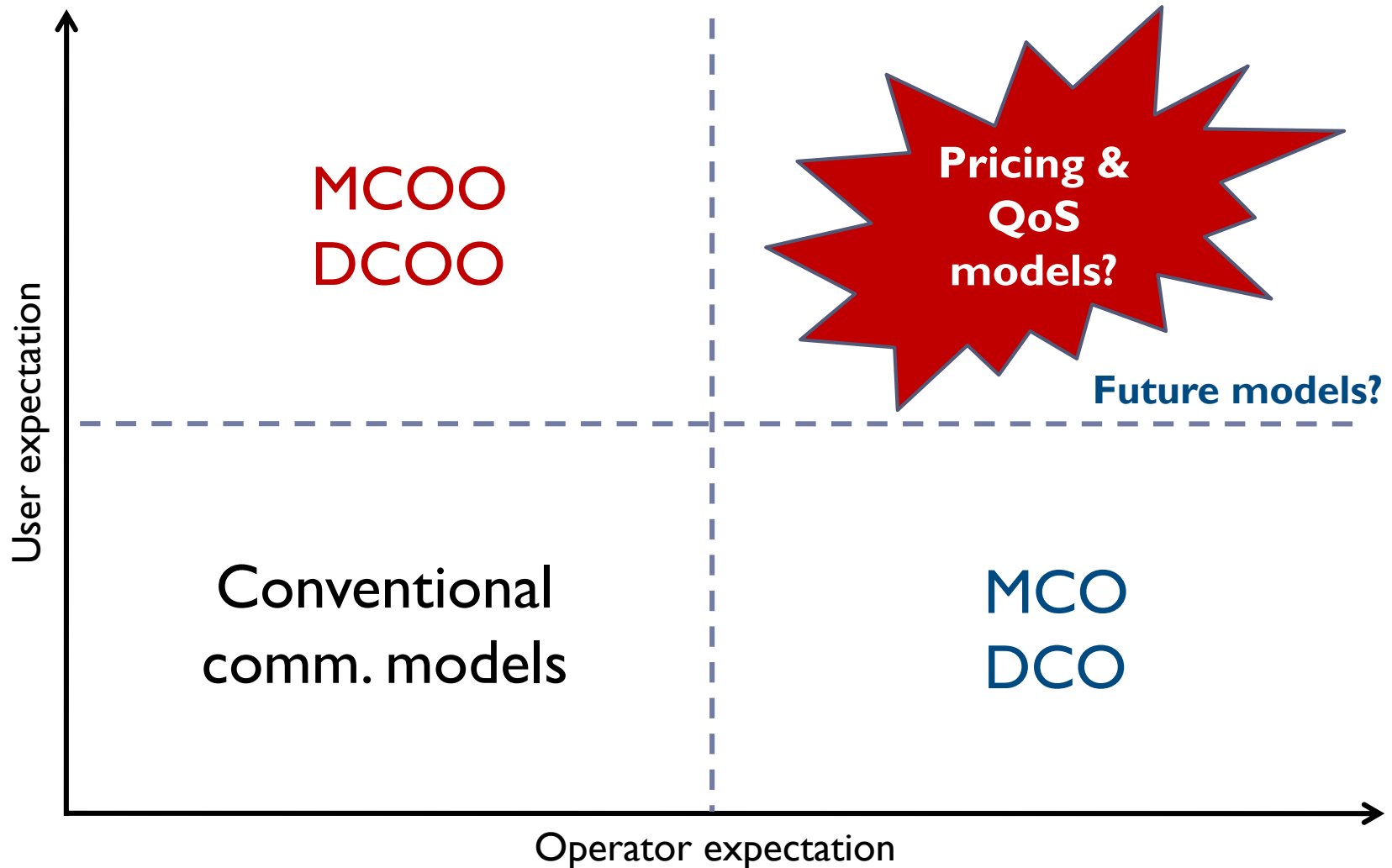
Direct Comm. with Operator (DCO)

Direct Comm. withOut Operator (DCOO)

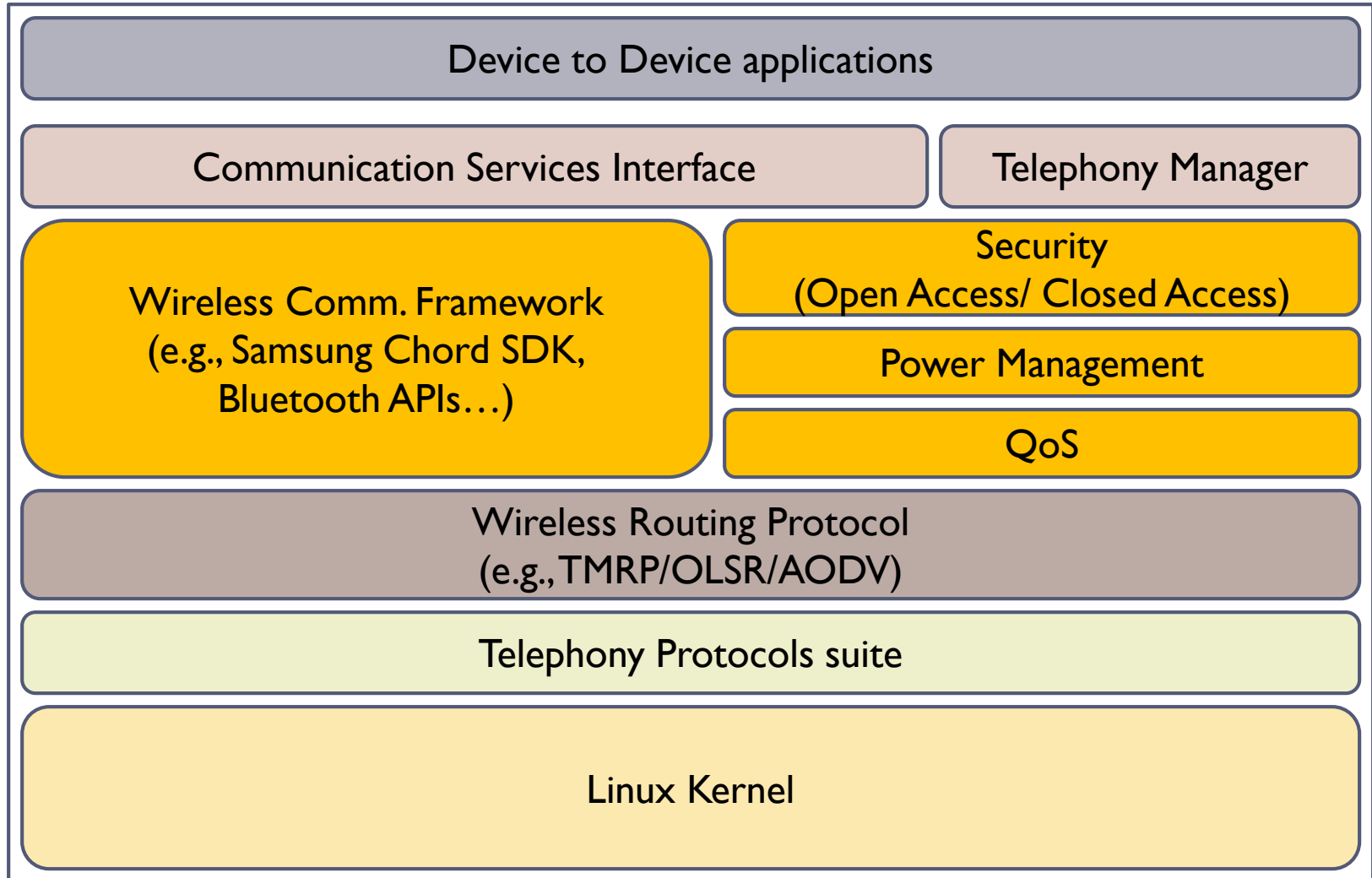
Research Perspective



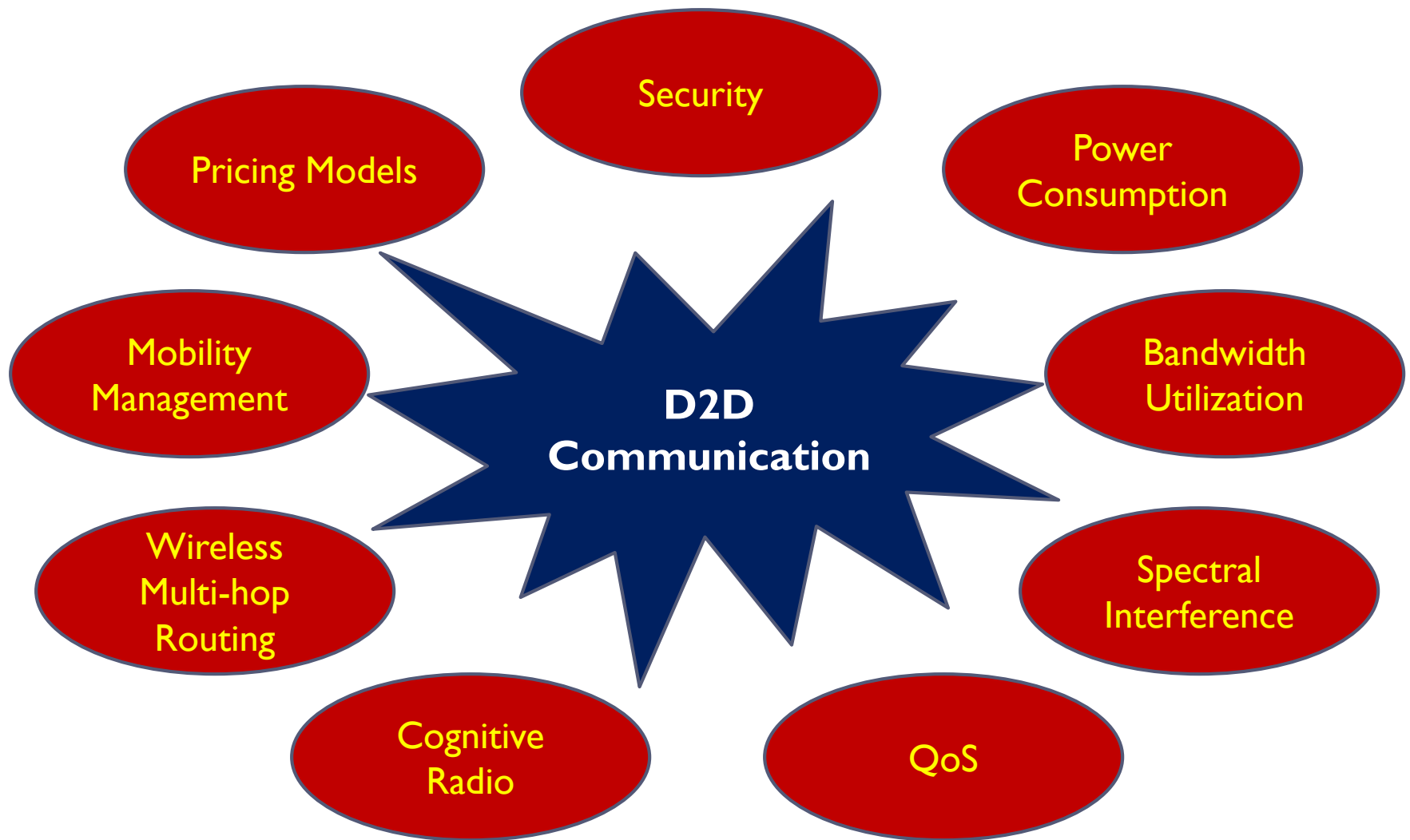
User & Operator Perspective



D2D Comm. Framework Proposal



Research Challenges & Trends



References

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Thank you for your listening

Q&A