Bits aren't bites: Constructing a "Communications Ether" that can grow and adapt

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Radio systems share space-time to communicate. Though we often picture the process of sharing as if we were dividing a fixed (but renewable) resource into disjoint "channels", that picture blinds us to the true physics of radio as classical waves or QED photons. The practical limits to communications capacity arise from constraints in our systems architectures, electronic technology, and regulatory architectures. This talk discusses a new way to think about radio systems as "societies of cognitive radios" that work to create a scalable, evolving, viral, and adaptable "communications ether" that eliminates the self-imposed "spectrum drought" due to current architectures and regulatory processes. The challenge to the industry is to shift from an "agoraphobic" communications architecture of scarcity, to an "agoraphilic" communications architecture that can grow with future market opportunities and market demand.