

Spectrum scarcity, sharing, and the commercialization of DSA

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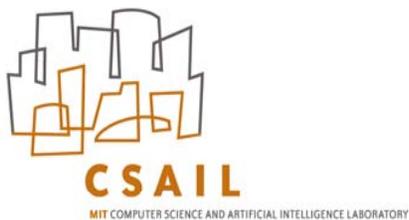
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MIT Communications Futures Program

*"Defining the roadmap for communications
and its impact on adjacent industries."*

Spectrum scarcity, sharing, and the commercialization of DSA

- ❑ "Scarcity" is important, but not the only motivation for DSA
- ❑ Transition to DSA is paradigm shifting
- ❑ Future is hybrid sharing model

Scarcity → sharing → DSA

- ❑ Scarcity: demand exceeds supply
- ❑ Ergo: suppress demand (ration) or increase supply (share)
- ❑ DSA enables both
 - Ration: reallocate to higher value uses
 - Share: increase spectral efficiency
- ❑ Commercialization of DSA involves innovation (investment) in
 - Technology → CR, antennas, & other stuff...
 - AND business models and policy frameworks

DSA has is paradigm shifting

- ❑ Decoupling of network infrastructure & spectrum
 - DSA “virtualizes” the RF
- ❑ Lots of potential benefits
 - Mix-and-match componentization (like stereo components)
 - Commoditization of sub-systems (SDR on Dell Hardware)
 - Decouple business innovation (service, market, firm organization)
 - Intermodal competition and scalable entry
- ❑ Transition to DSA has positive feedbacks
 - Commercialization for one purpose makes easier for another
 - Facilitates addressing scarcity challenge...

Future of sharing is hybrid

- ❑ Mix of technologies, business models, and policies
- ❑ Legacy always with us (today's will be tomorrow's legacy)
- ❑ No one size fits all solution
- ❑ No crystal ball
- ❑ Need continuum of spectrum "property rights" options to meet varying needs for interference protection.
- ❑ DSA makes it easier to live in hybrid world.
 - Reduces need for for harmonization (CR as substitute for standardization)
 - Enables more flexible response to changing interference dynamics.