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The Law of Communications

# Are Two Spectrum Agencies Too Many?

National Spectrum Management Association

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# Overview

- NTIA and FCC respectively manage Federal and non-Federal spectrum users
  - separation of powers made sense 35 years ago (when NTIA was formed)
  - then, plenty of empty spectrum; little conflict between agencies
- Now, spectrum in short supply
  - friction between NTIA and FCC increasing
- Should Congress merge FCC and NTIA spectrum functions?

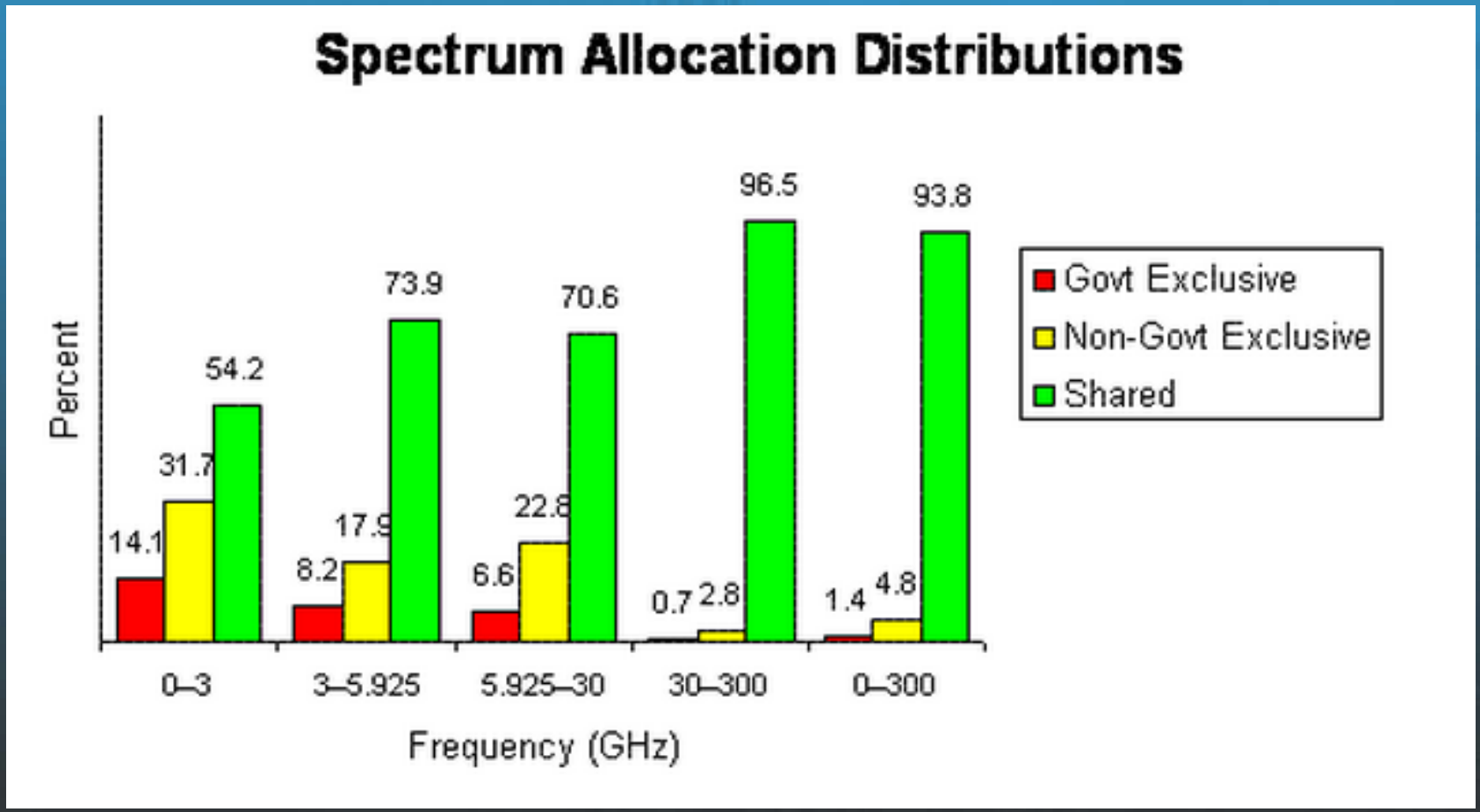
# One Spectrum, Many Users – 1

- Two spectrum management agencies:
  - National Telecommunications and Information Administration (NTIA)
    - oversees Federal Government users
  - Federal Communications Commission (FCC)
    - oversees all other users (commercial, individuals, state and local government, etc.)
- NTIA and FCC each has jurisdiction over entire spectrum
- Bands allocated for Federal users, private users, shared
  - incorrect (but convenient) to refer to Federal, private, and shared spectrum.

# One Spectrum, Many Users – 2

- Most spectrum is shared:
  1. Federal only (1.4%)
  2. non-Federal (private) only (4.8%)
  3. shared between Federal and non-Federal (93.8%)
- Band-by-band breakdown in Table of Frequency Allocations:
  - FCC rules : 47 C.F.R. § 2.106
  - www.spectrumwiki.com
- Totals are misleading: Federal-only frequencies are concentrated in the most useful parts of the spectrum.

# One Spectrum, Many Users – 3




Graphic: NTIA

# Examples of Federal / Non-Federal Issues

- Airport body scanner
  - marketed to TSA under FCC waiver
  - operates in Federal/private shared spectrum 24.25-30 GHz
  - waiver needed NTIA review


- Surveillance robot
  - marketed to state and local police under FCC waiver
  - operates in military radar spectrum 430-448 MHz
  - waiver needed NTIA review

# More Examples

- broadband over power line
- expanded U-NII band
- ultra-wideband:
  - communications
  - radar
  - location
  - perimeter detection
- Wi-Fi  b/g/n
- body-implanted nerve stimulator
- 60 GHz unlicensed
- through-wall surveillance radar
- level-probing radar
- mining radar
- remote meter reading
- remote power
- RFID
- many more.

# Regulatory Regimes Compared

- NTIA: created by Congress in 1978
  - merger of White House Office of Telecommunications Policy and Commerce Dept. Office of Telecommunications
  - housed in Department of Commerce
  - executive agency: reports to the President
- FCC: created by Congress in 1934
  - succeeded Federal Radio Commission (from 1926)
  - independent agency: reports to Congress.

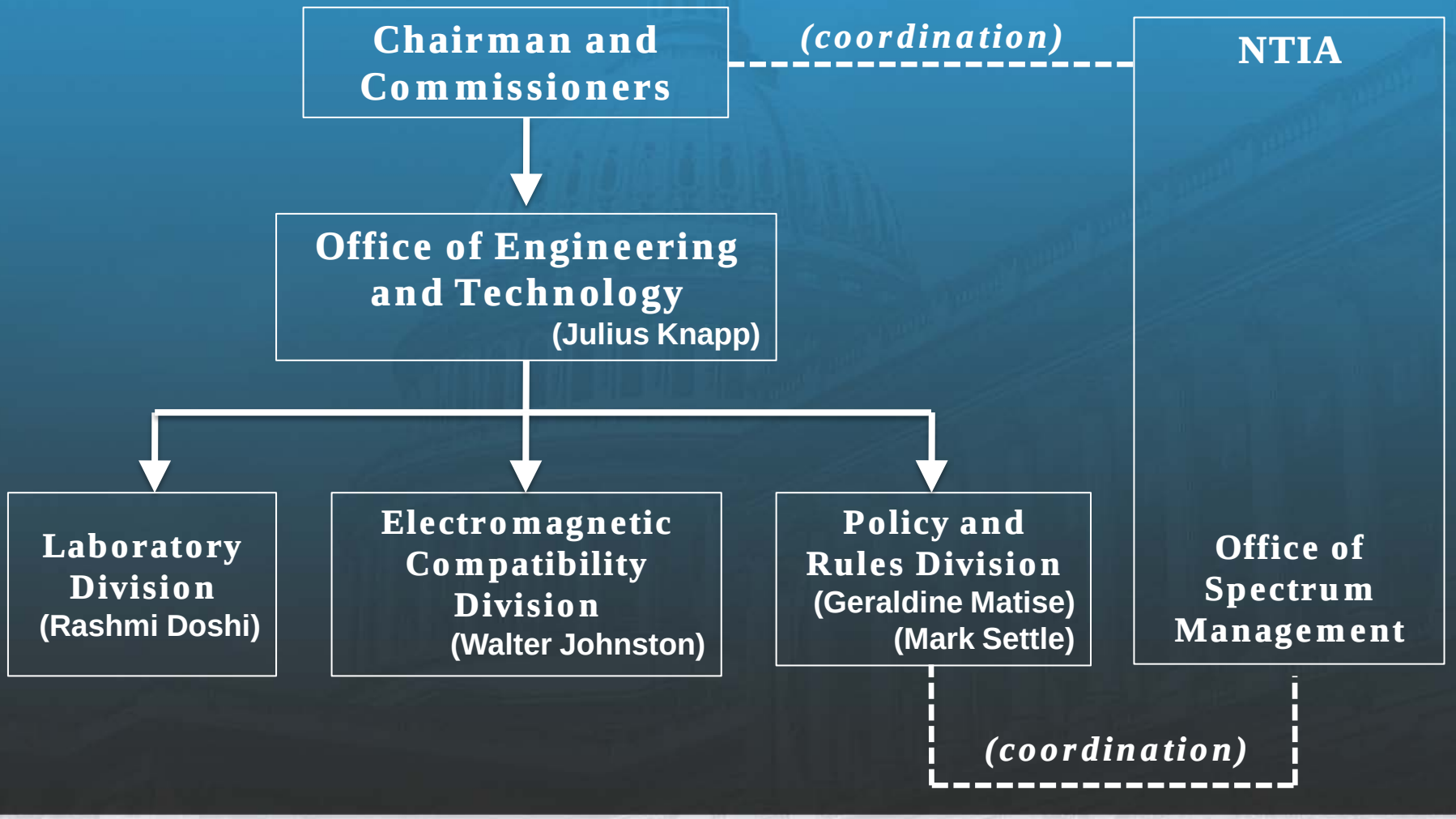
# Who Regulates Whom

| End User | Spectrum Allocation | | |
|---|---|---|---|
| | Non-Federal | Shared | Federal |
| Non-Federal | FCC | FCC (coordinates with NTIA) | FCC (experimental license or UWB) |
| Federal | FCC or NTIA (unlicensed) | NTIA (coordinates with FCC) | NTIA |

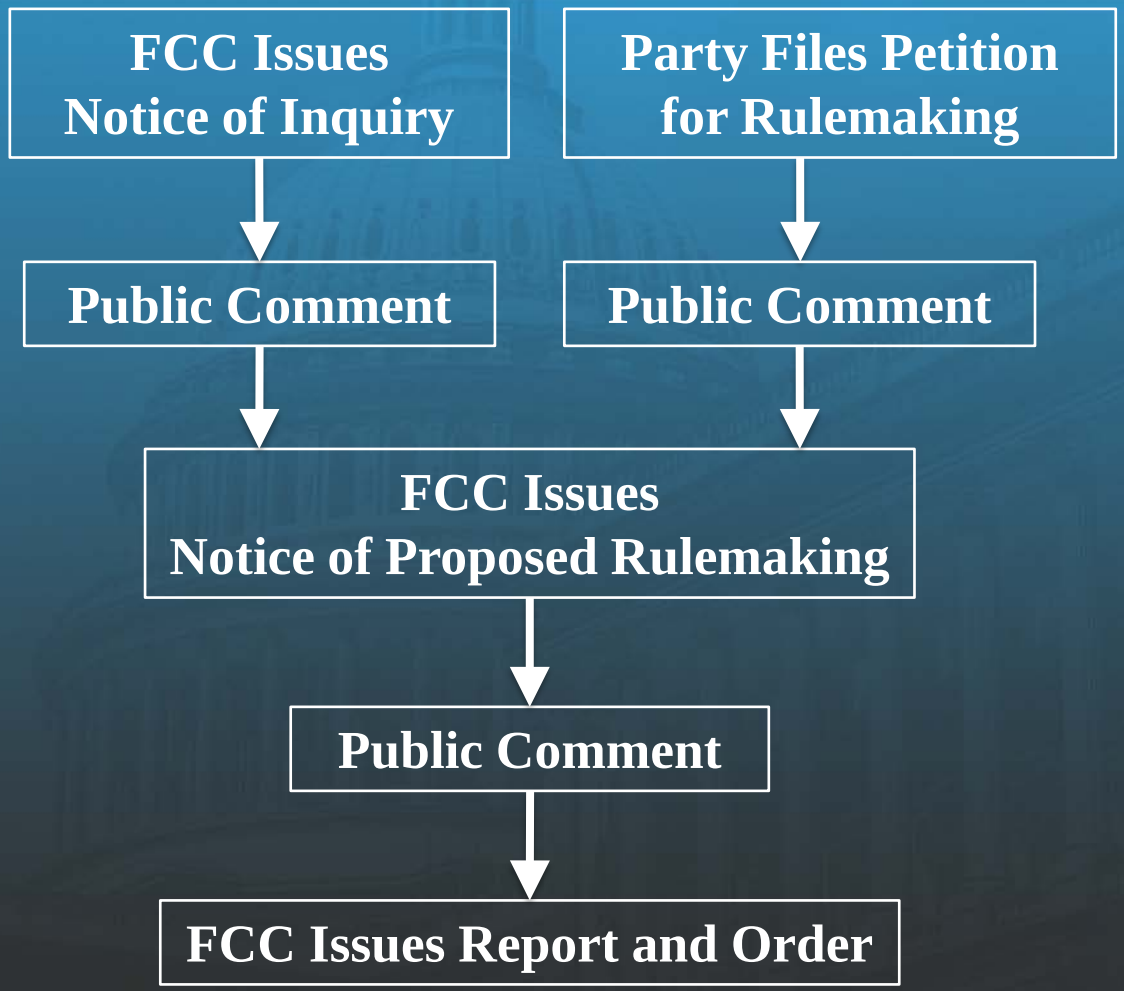
# FCC Procedures – New Spectrum Uses

- FCC: RF emitters must comply with technical rules in 47 C.F.R.
  - cover frequencies, power, bandwidth, modulation, etc.
- Innovative devices often fail to comply
- Procedures for new kinds of devices:
  1. Rulemaking: amends FCC rules to allow new use of spectrum
     - may affect frequency band, power, modulation, etc.
  2. Waiver: allows marketing of device despite non-compliance
     - usually with conditions
- Most rulemakings and waivers are opposed
- Rulemaking or waiver in shared spectrum requires NTIA coordination
  - applies to most rulemakings and wavers.

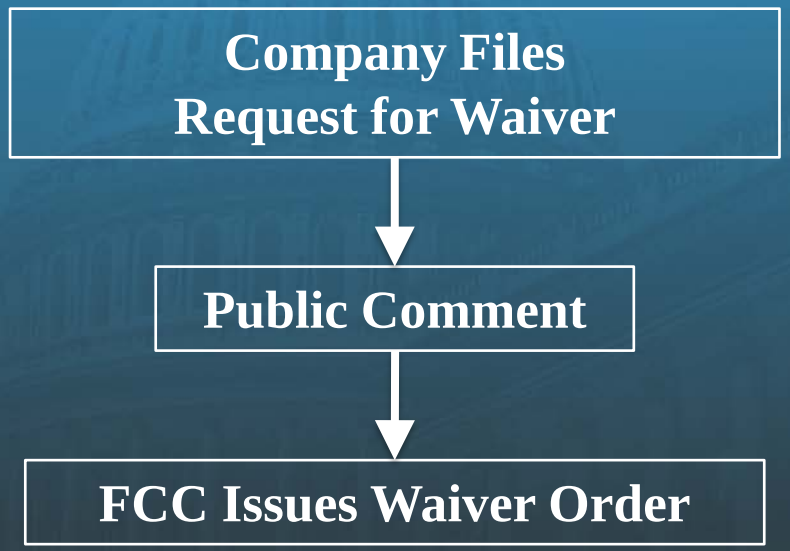
# FCC Spectrum Functions (Simplified)



# FCC Rulemaking (Much Simplified)



# FCC Waiver Procedure (Much Simplified)



# Character of FCC Procedures

- FCC publicly announces proposed action
- Proceeding is open to public
  - anyone can comment
- Transparent:  most filings available to public
- Process:  contention between proponents and opponents
- Decision process follows legal pronciples
- FCC explains decision, responds to comments
- Public can seek reconsideration, court review of decision.

# About NTIA – In General

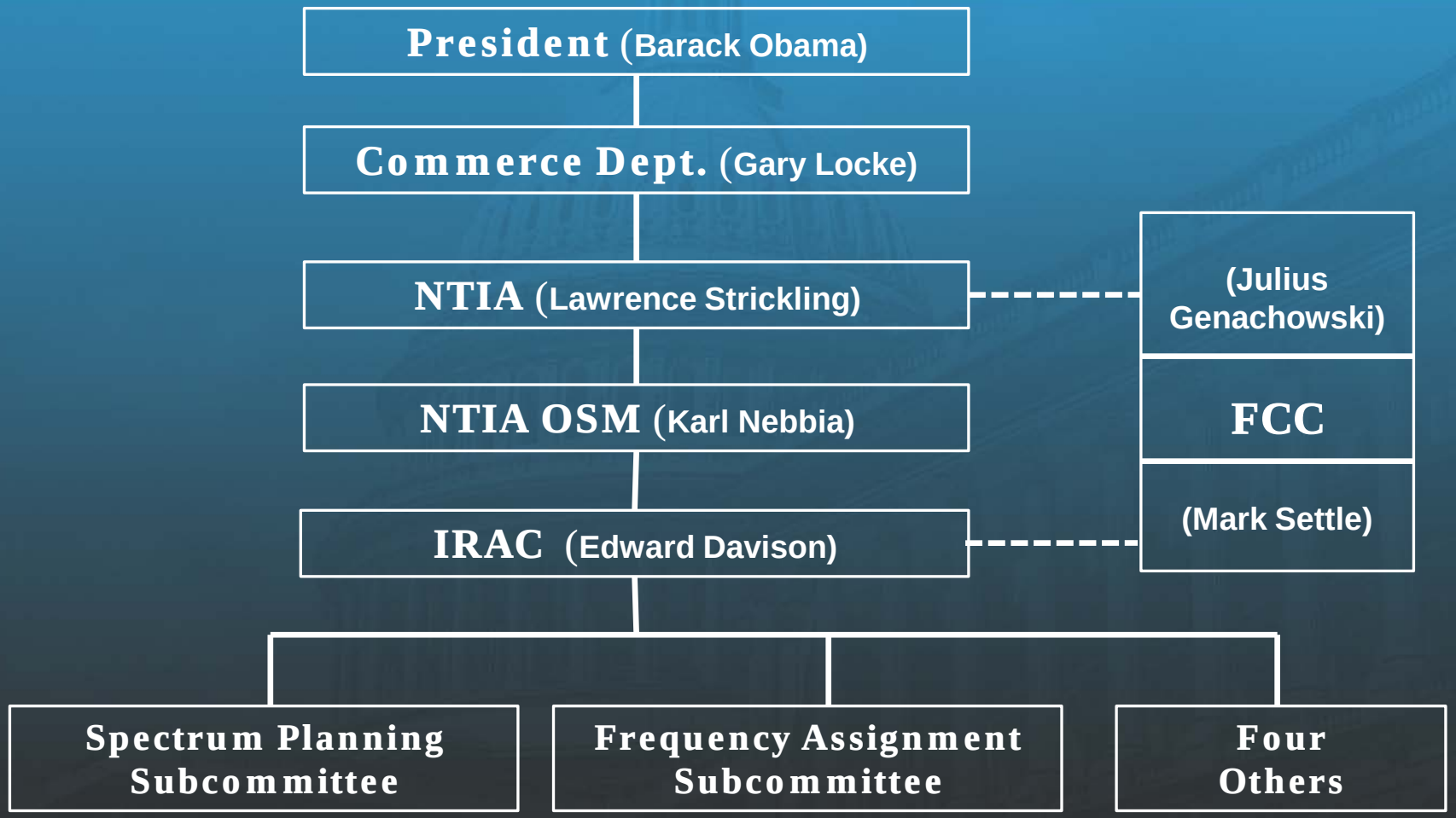
- Responsibilities include:
  - spectrum planning and administration
  - participation in international spectrum negotiations
  - U.S. representation on Internet domain names
  - advice to President on telecommunications and information policies
  - helping U.S. companies compete globally in information technology and telecommunications sectors
  - many more
- Spectrum work through NTIA Office of Spectrum Management (OSM).

# About NTIA – Spectrum Responsibilities

1. NTIA (OSM) is the "Federal Government's FCC":
   - allots Federal spectrum for specific applications
   - assigns frequencies to Federal users
   - acts on requests for new Federal equipment and applications
2. Collaborates with FCC on:
   - any use of shared Federal / non-Federal spectrum
   - non-Federal use of Federal spectrum, *e.g.*:
     - experimental license applications in Federal spectrum
     - FCC waivers in Federal spectrum
   - spectrum allocation proceedings

✸ Chairs Interdepartment Radio Advisory Committee (IRAC).

# NTIA / IRAC Organization



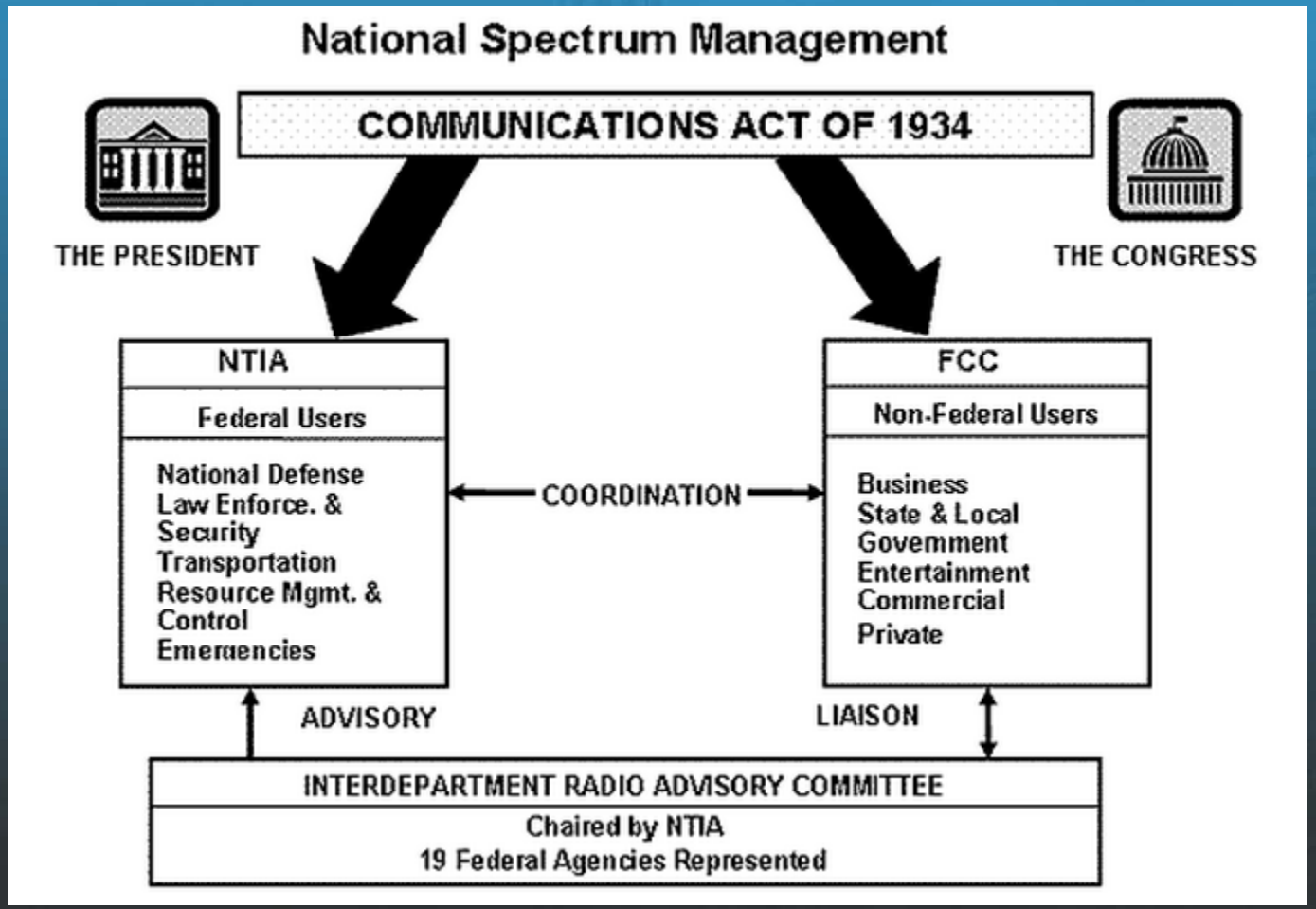
# About IRAC – 1

- Dates from 1922
- Composed of 19 spectrum-using Federal agencies:
  - Agriculture
  - Air Force
  - Army
  - BBG
  - Coast Guard
  - Commerce
  - Energy
  - FAA
  - Homeland Security
  - Interior
  - Justice
  - NASA
  - National Science Foundation
  - Navy
  - State
  - Transportation
  - Treasury
  - U.S. Postal Service
  - Veterans Affairs
- Also includes FCC liaison (Mark Settle), DoD and NSA observers
- Chaired by Edward Davison, NTIA OSM.

# About IRAC – 2

- Advisory only; no decision-making authority
- Coordinates frequency use:
  - among U.S. agencies
  - between Federal government and non-Federal users (via FCC)
- Advises NTIA on policies, programs, procedures, technical criteria pertaining to spectrum
- Meets in person every two weeks
  - considers most requests promptly—usually at next meeting
  - sometimes accepts outside presentations.

# NTIA / FCC Interaction




Graphic: NTIA

# NTIA Spectrum Approval (Federal User)

1. "Major" systems
   - proposal to IRAC Spectrum Planning Subcommittee
   - roughly analogous to FCC rulemaking
   - requires very extensive data, reviewed in four stages
2. "Non-major" systems
   - proposal to IRAC Frequency Assignment Subcommittee
   - roughly analogous to FCC license application
   - application data must follow specific, complex format
   - addresses only spectrum usage, not equipment approval
3. Low-power equipment
   - FCC Part 15 or NTIA "Annex K" (similar).

# NTIA Spectrum Approval (Non-Federal User)

- NTIA participates in FCC rulemakings, waivers in shared spectrum
  - conducts technical studies
  - consults with affected agencies through IRAC
  - consults with FCC either on or off the record
    - NTIA has *ex parte* exemption: can present to FCC without public disclosure
- FCC need not follow NTIA recommendations, but usually does.

# Character of NTIA / IRAC Procedures

- Party dealing with NTIA is Government agency
  - procuring agency for Federal system
  - FCC for use of shared spectrum
- Limited public participation
- IRAC advises NTIA by consensus
  - NTIA need not accept IRAC recommendation
- NTIA final recommendations to FCC usually not public
- Disappointed party cannot challenge NTIA recommendations.

# Friction Increasing Between Agencies

- As spectrum fills up, less room for new applications
- Some recent trouble spots:
  - expanded 5 GHz U-NII band interferes with airport weather radar
  - 315 MHz military radios interfere with garage door openers
  - ultra-wideband: NTIA asked FCC to impose severe power and usage limitations
  - broadband over power line: ditto
  - NTIA required to identify 500 MHz for FCC wireless broadband
  - many routine waivers and rulemakings.

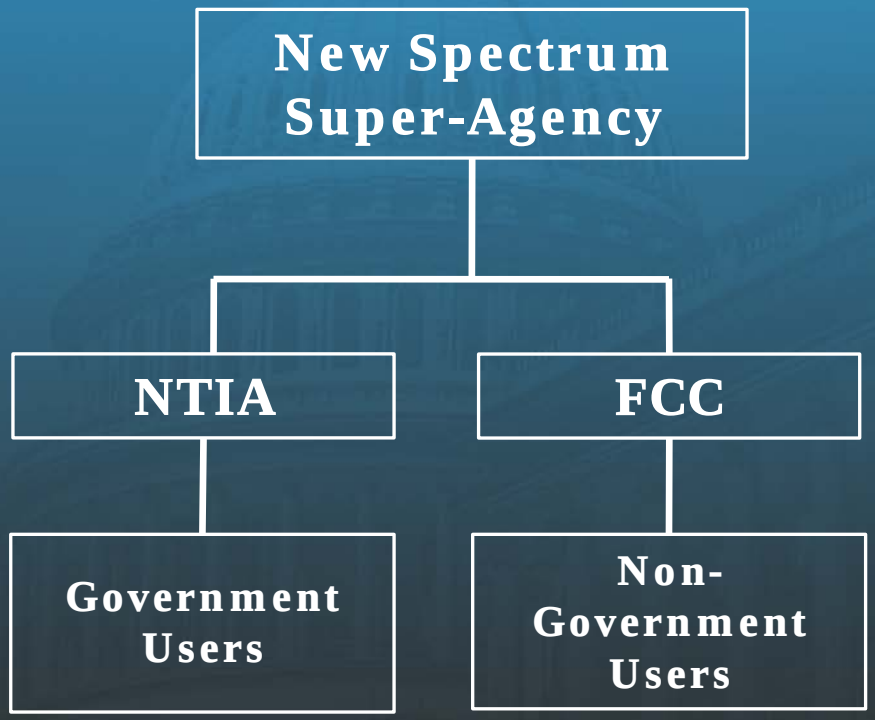
# Would One Agency Work Better?

- Radio waves don't care if source is Federal or non-Federal
  - interference potential is the same
- Might reach better outcomes if all spectrum decision-makers share same mission and priorities:
  - simpler coexistence between Federal and non-Federal users
  - faster coordination of new proposals
  - one-stop lobbying for proponents and opponents
  - less spectrum-hoarding to protect future needs.

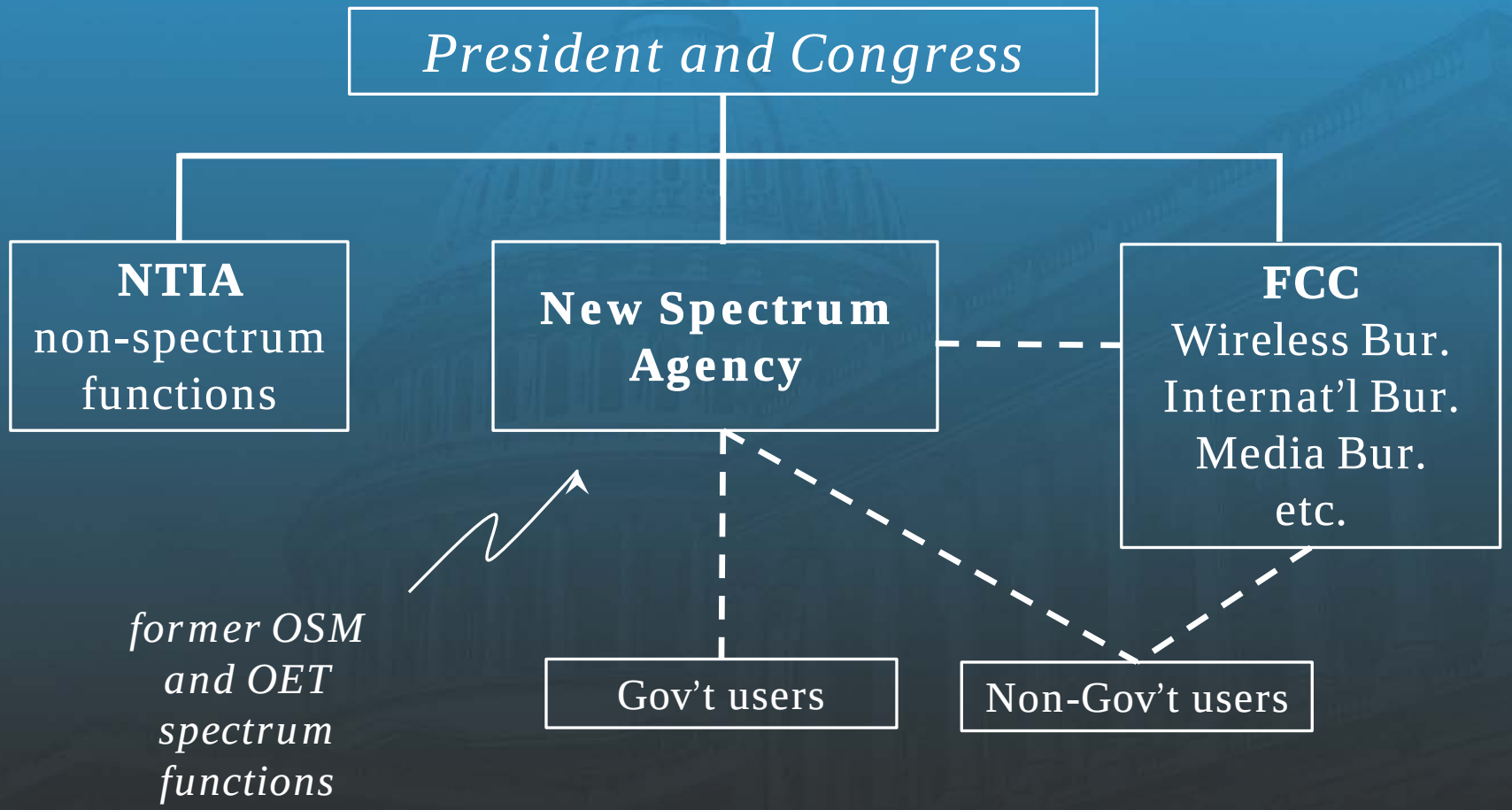
# Obstacles to Unification

| | FCC | NTIA |
|---|---|---|
| **Agency Type** | independent | executive |
| **Client** | public | U.S. Government |
| **Main Mission** | facilitate use of radio | protect Gov't users |
| **Priority** | public interest | safety; security |
| **Applicant** | member of public | FCC; Gov't agency |
| **Public Participation** | yes | limited |
| **Decision-Making** | contention | consensus |
| **Governing Principles** | legal; political | technical; political |
| **Appeal Process** | yes | no |

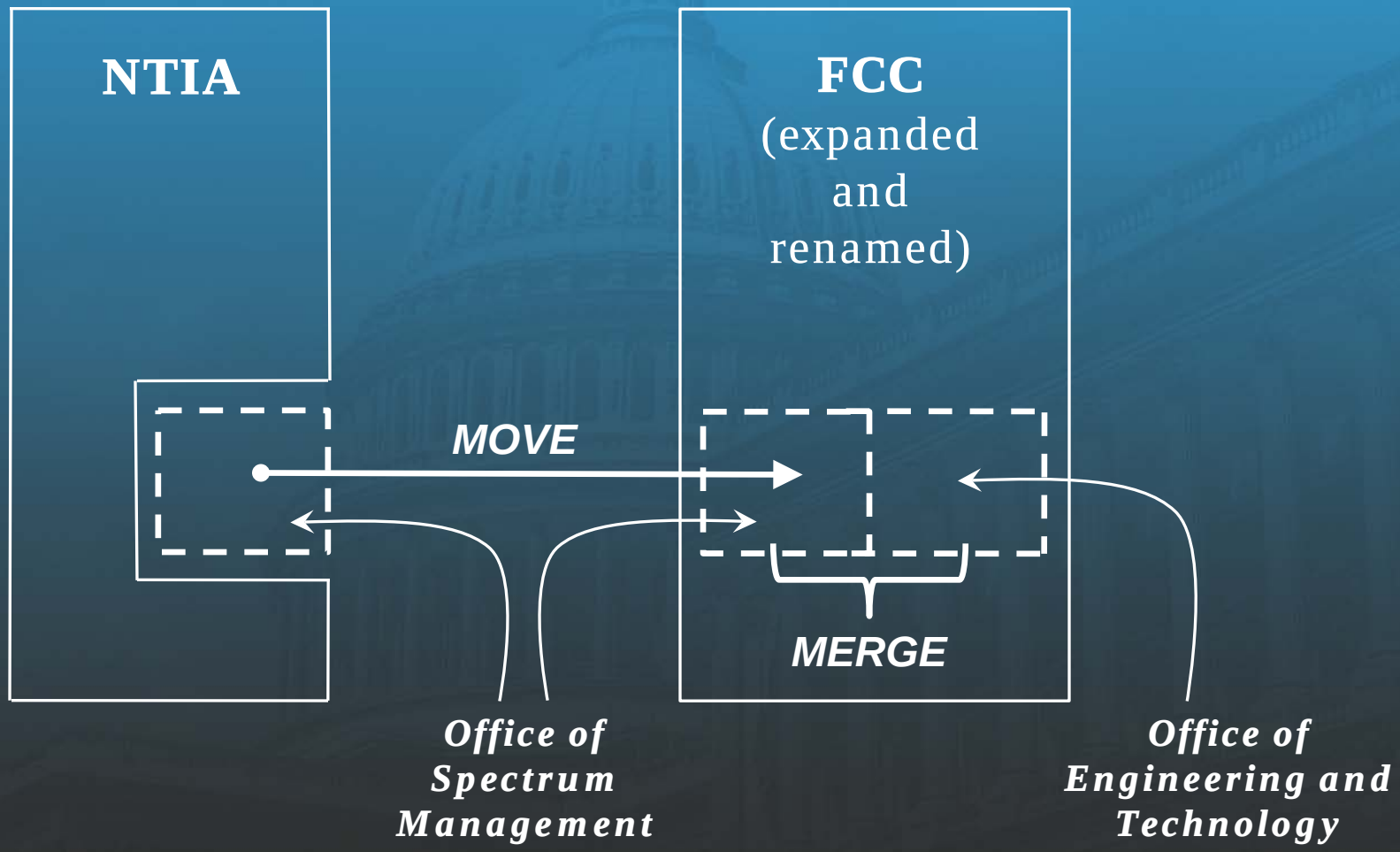
# Structural Options (1) – Not Recommended



# Structural Options (2) – Not Recommended



# Structural Options (3)



# Conclusion

- Combining NTIA and FCC spectrum functions may offer faster, better, more efficient spectrum management
- But change would be controversial, disruptive, politically difficult
  - would require an Act of Congress
- Open question whether benefits would justify costs.

# Thank you!

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