

Telecommunications Laws, Regulations, and Organizations

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**USTTI
Radio Frequency Spectrum Management Course
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Outline

- ✓ Why are there laws and regulations in spectrum management?
- ✓ What is being regulated?
- ✓ What is “spectrum”?
- ✓ Elements of successful laws and regulations
- ✓ Basics of U.S. telecommunications law

Why Do So Many Laws and Regulations Govern Spectrum Management?

**Need, objectives,
costs and benefits**

Spectrum Regulation

✓ Why government regulation?

Possible reasons:

- Spectrum is scarce
- Protection from harmful interference
- Efficiency = more users
- Highest value users
- Access for many/more

Additional Possible Reasons to Regulate

- Promote investment and economic development
- Create affordable service for all
- Ensure competition
- Protect national defense and public safety
- Preserve free flow of information
- Protect public from inappropriate material
- Make money for government

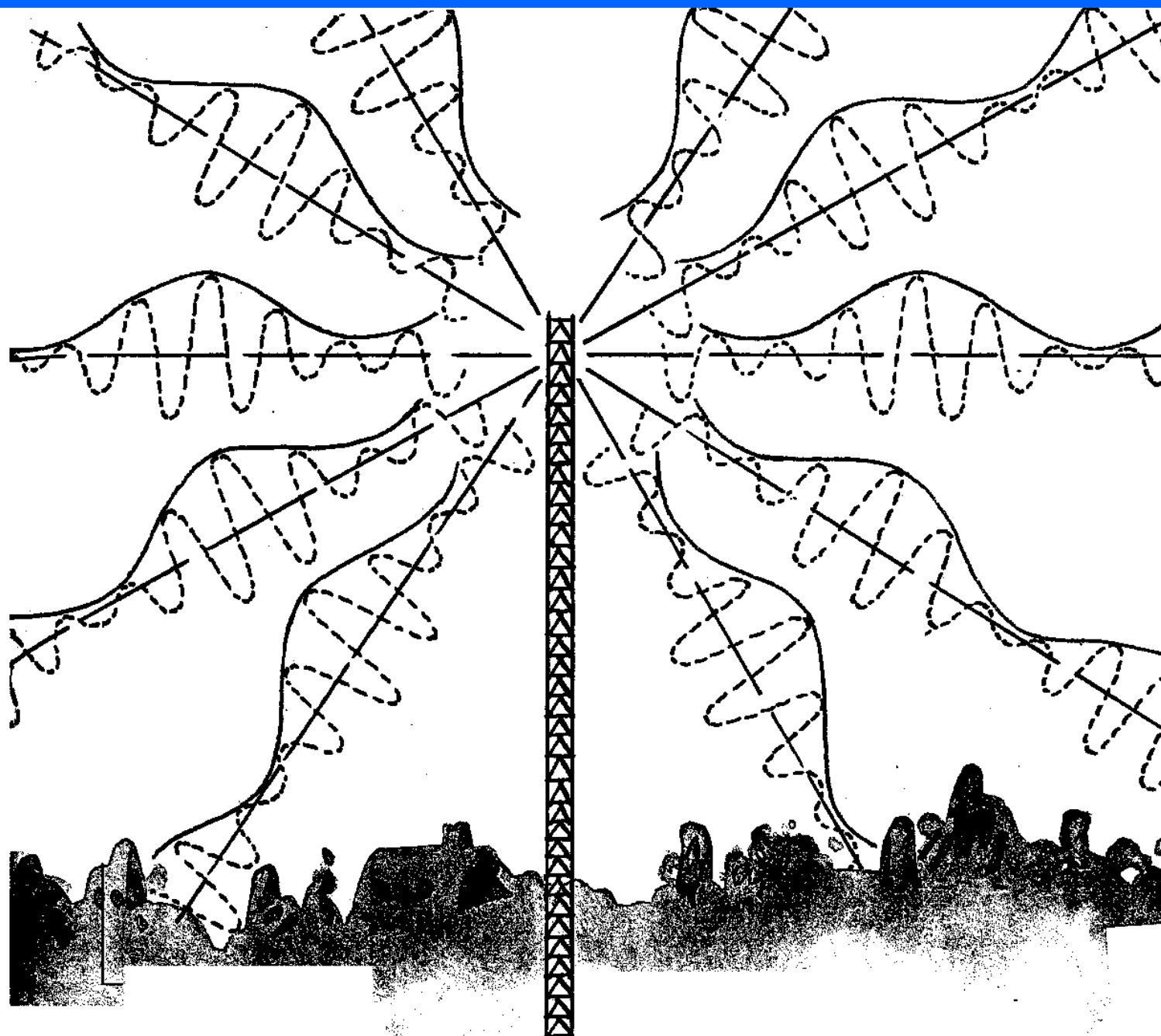
Costs of Regulation

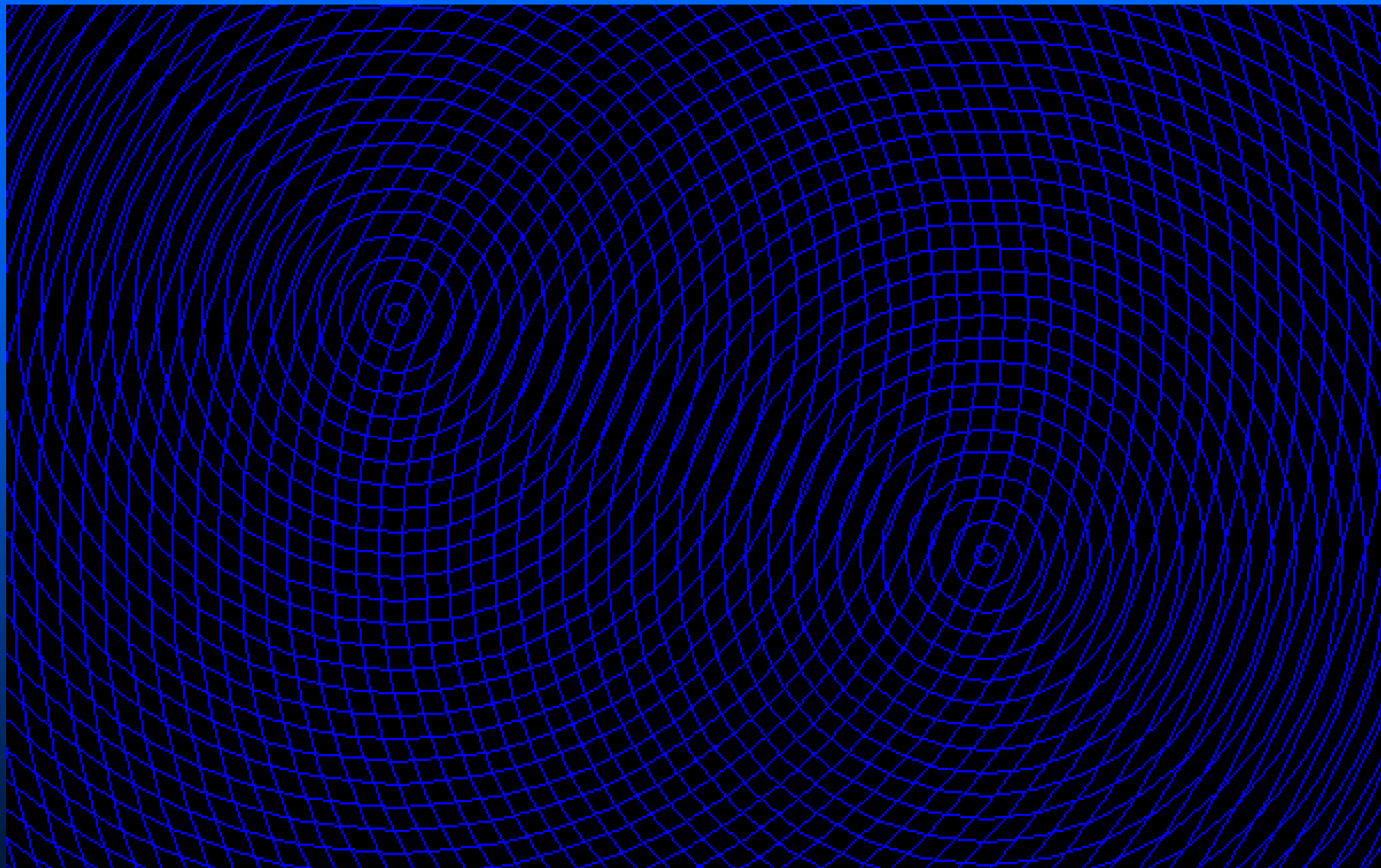
- ✓ Incorrect judgments
 - *From an often inflexible and centralized process*
- ✓ Slow and expensive decision-making
 - *Delays services and adds costs*
- ✓ Actual cost of regulating
 - *Increases tax burden and prices*
- ✓ Distortion to market
 - *Leads to inefficient results*
- ✓ Interference with free speech

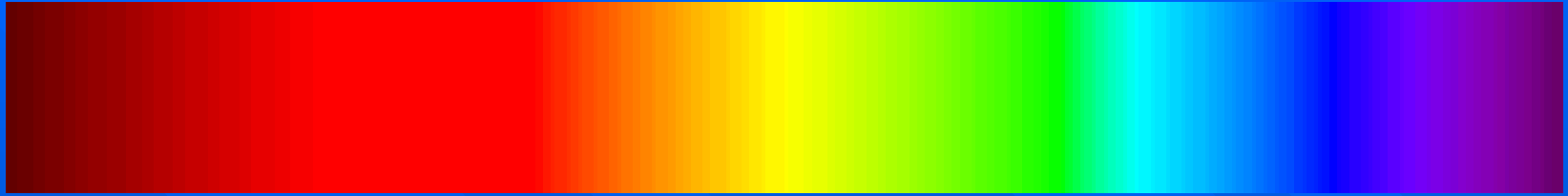
What is being regulated?

What is being managed?

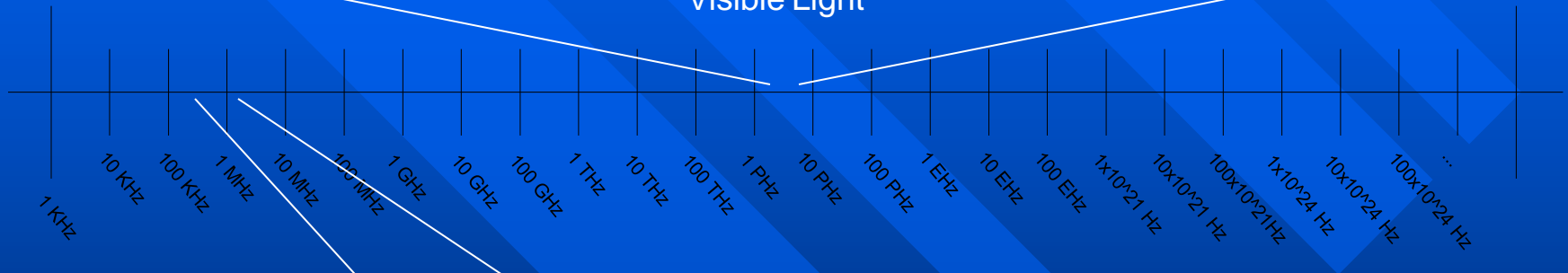
- ✓ Does spectrum even exist?
- ✓ Government management of spectrum rights is a legal exercise



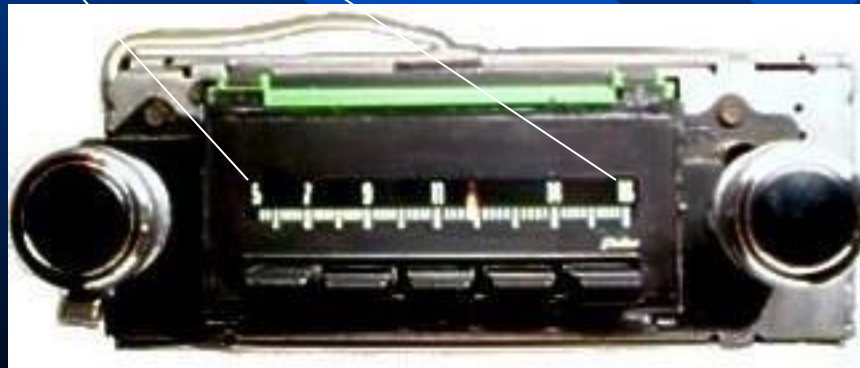


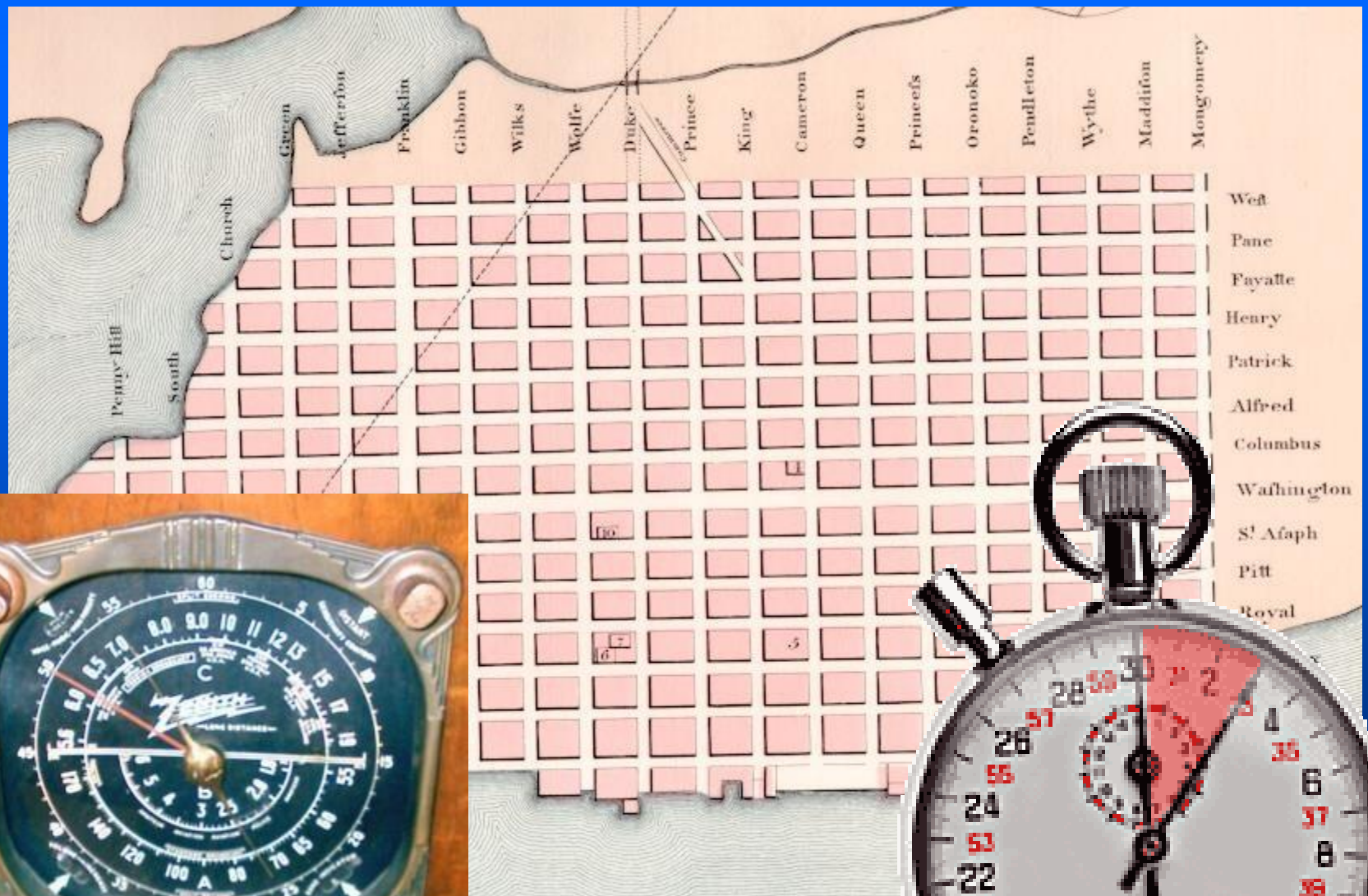


Visible Light



AM Radio





UNITED STATES FREQUENCY ALLOCATIONS

THE RADIO SPECTRUM

RADIO SERVICES COLOR LEGEND

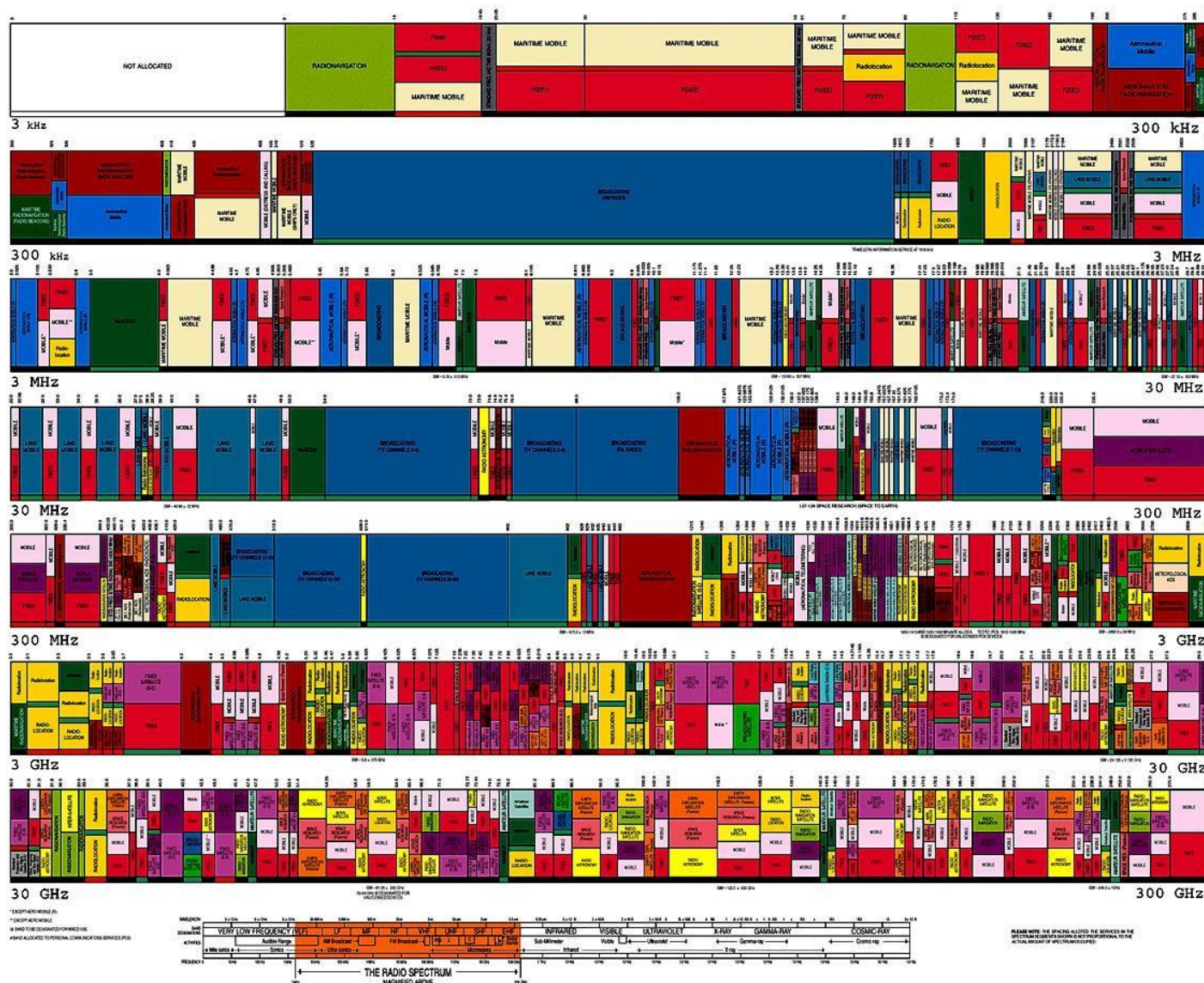
■ AERONAUTICAL MOBILE	■ INTER-SATELLITE	■ RADIO ASTRONOMY
■ AERONAUTICAL MOBILE SATELLITE	■ LAND MOBILE	■ RADIO DETERMINATION SATELLITE
■ AERONAUTICAL RADIO NAVIGATION	■ LAND MOBILE SATELLITE	■ RADIO LOGGION
■ AMATEUR	■ MARITIME MOBILE	■ RADIO LOGGION SATELLITE
■ AMATEUR SATELLITE	■ MARITIME MOBILE SATELLITE	■ RADIO NAVIGATION
■ BROADCASTING	■ MARITIME RADIO NAVIGATION	■ RADIO NAVIGATION SATELLITE
■ BROADCASTING SATELLITE	■ METEOROLOGICAL AIDS	■ SPACE OPERATION
■ EARTH EXPLORATION SATELLITE	■ METEOROLOGICAL SATELLITE	■ SPACE RESEARCH
■ FIXED	■ MOBILE	■ STANDARD FREQUENCY AND TIME SIGNAL
■ FIXED SATELLITE	■ MOBILE SATELLITE	■ STANDARD FREQUENCY AND TIME SIGNAL SATELLITE

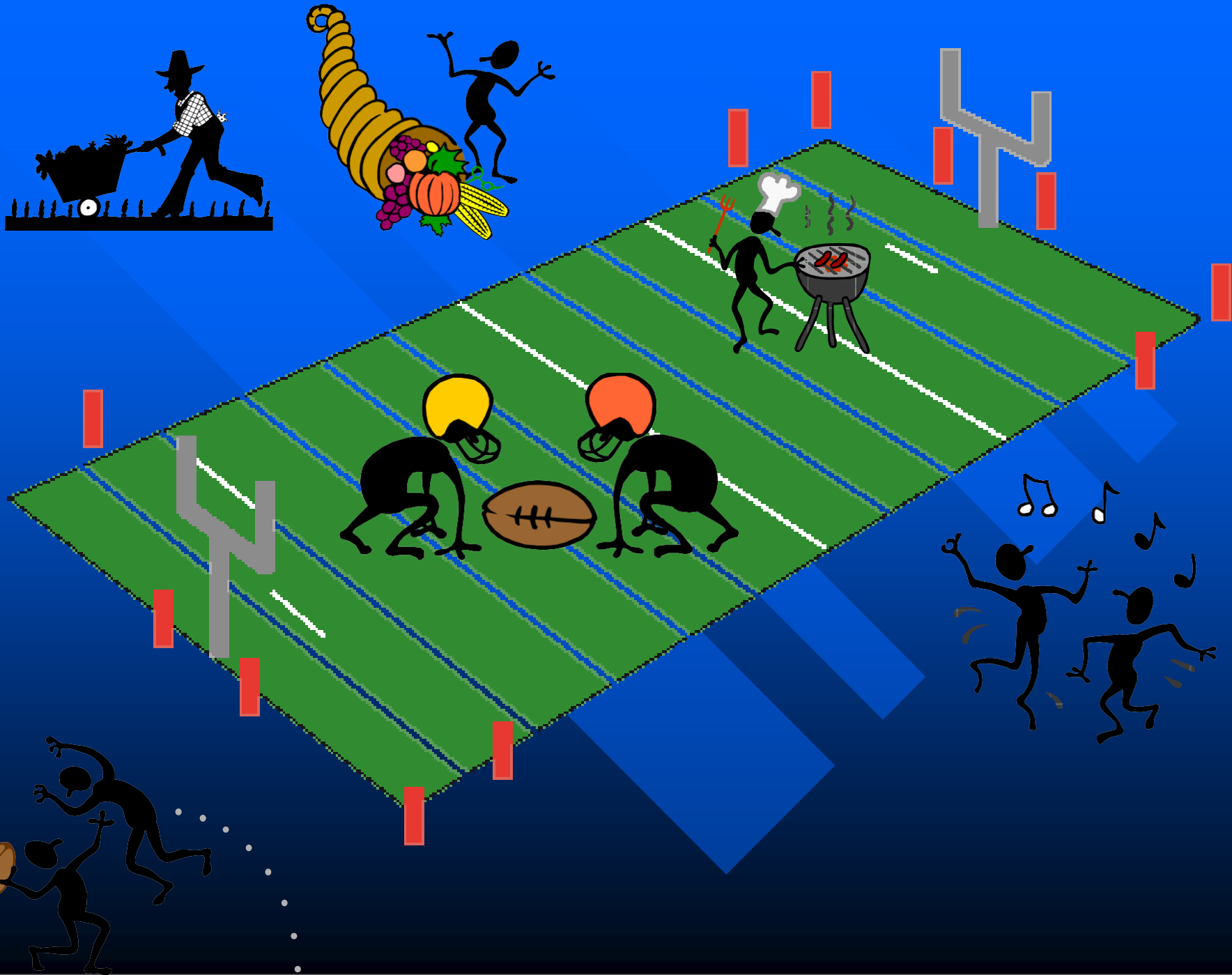
ACTIVITY CODE

■ GOVERNMENT EXCLUSIVE	■ GOVERNMENT NON-GOVERNMENT SHARED
■ NON-GOVERNMENT EXCLUSIVE	

ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	DESCRIPTION
Primary	FIXED	Coastal Lighthouses
Secondary	MOBILE	1st Class with lower class letters
Permitted	BROADCASTING	Capital Letters between ship-to-ship links





Review

- ✓ Does spectrum exist in nature?
- ✓ Is there “ether”?
- ✓ Is spectrum tangible or is it a description of something? If a description, what does it describe? Rights to operate?
- ✓ Is spectrum like any other resource? Is it like land? A parking lot? A ship channel or a highway?

U.S. Frequency Assignments *Licensing*

- ✓ License: limited rights under express conditions
- ✓ Grants access to spectrum and gives right to operate
- ✓ Subject to regulatory framework – compare “license contract”
- ✓ Miscellaneous
 - No property rights; limited time period but possible renewal expectancy
 - Defined geographic area
 - “De facto” transfer right
 - Power limits, other specifications
 - **Usually technology neutral with no required standard and use flexibility**
 - » For example, no separate GSM and CDMA or 4G and 5G licenses

U.S. Frequency Assignments

Competitive Bidding

- ✓ Permitted since 1993 under section 309(j) of Communications Act where “mutually exclusive” applications
- ✓ Assignment-licensing tool only - - alternative to comparative hearings or lotteries
- ✓ Not for allocation; no property rights
- ✓ Revenue to government, but cannot take revenue into account when determining public interest

License Exempt Services

Non-Licensed

- ✓ Generally exist under “Part 15” of the FCC’s rules
- ✓ Low Power
- ✓ Subject to “type acceptance” equipment certification
- ✓ General principle that must accept interference and must not cause interference from authorized operations and equipment

RIGHTS

- ✓ Compare license right to property right
 - Right to access and occupy
 - Right to proceeds
 - Right to trade or divest
 - Right to subdivide
 - Right to change service

Resource and Property Analogies

- ✓ Possibly analogous resources:
 - Real property
 - Parking Lot
 - Airline landing slots
 - Grazing Land
 - Oil (non-renewing)
- ✓ Government or private control?
- ✓ Regulation resources, such as through zoning.

Market Mechanisms that follow Property Model

- ✓ Competitive bidding (Auctions)
 - To assign new licenses
 - To allocate spectrum?
- ✓ Flexibility (More decisions made by operator)
 - Re technology
 - Re service offering
- ✓ Leasing
- ✓ Trading

Property/Market Model

Criticisms

- ✓ Over emphasis on money
- ✓ May cede too much control to user
- ✓ Difficult to apply to non-commercial spectrum
- ✓ Market failures may lead to under-use of spectrum
 - Speculation
 - Warehousing
 - Resistance to sharing
- ✓ Difficult to apply to non-commercial spectrum

Commons Model

- ✓ Spectrum is not a “thing”
- ✓ Spectrum is not necessarily scarce
- ✓ Interference is receiver error, not natural phenomenon
- ✓ Technology offers sharing solutions that promise relatively open access:
 - Low power operation
 - Mesh network
 - Intelligent application of protocols, etiquette

Commons/Open Access Approach

Criticisms

- ✓ Feudal commons caused tragedy: No limit on use of resource not a true commons.
- ✓ Does not provide incentives to users to be efficient and to invest.
- ✓ Cannot be uniformly applied to all spectrum

THE

LAW

Elements of Successful Laws and Regulations

✓ Transparency

- Public Input/Consultations by All Interested Parties
- Publication/Explanation of Decisions

✓ Competency

- Independent Regulator
- Skilled Staff
- Unbiased and Ethical Decisions

✓ Confidence

- Appeal to Independent Body
- Consistency and Rulemaking and Enforcement
- Finality and Enforceable Rights

Roles of Regulators and Regulated

- ✓ Government
 - Lawmakers: Basic law and policy
 - Regulators: Details and flexibility
 - Arbiters: Review decisions
- ✓ Private sector:
 - Operators: Manage service, including investment and service levels
- ✓ Others
 - Standards bodies
 - International Organizations

Hierarchy of U.S. Laws

- ✓ Constitution -- *Highest law of the land*
- ✓ Treaties – *Second only to constitution*
- ✓ Legislative Acts – *Must be constitutional*
 - Passed by Congress; signed by President
- ✓ Executive (Presidential) Orders and Memoranda
Must be within presidential authority
- ✓ Regulations (*Laws promulgated by agencies or commissions*)
Note: All laws subject to review by courts

Evolution of U.S. Telecommunications Laws

- ✓ Radio Act of 1912:
 - Licenses for commercial radio stations issued by Commerce Department
 - No limit on number of licenses
- ✓ Radio Act of 1927/Communications Act of 1934/Telecommunications Act of 1996 (47 U.S.C.)
 - Establishment of independent commission
 - Public interest standard
 - Limited term license
 - Commission has authority over radio use, except government owned and operated stations (which are under authority of President)

Evolution of U.S. Telecommunications Laws

- ✓ **Communications Act (47 United States Code)**
 - Title I Authority and Functions
 - Title II Common Carriage
 - Title III Radio Regulation
 - » Section 305 reserves assignment of U.S. government owned and operated “radio stations”
 - Additional Titles on administration, cable television, etc.
 - Amendments such as the Telecommunications Act of 1996 and many others, including 47 U.S.C. 309(j) Omnibus Budget Reconciliation Act (1993), allowing auctions.
- ✓ **Code of Federal Regulations (47 C.F.R.)**
 - » Well known “Part 15” allows non-licensed transmissions

Government Organizations with Telecommunications Functions

- ✓ Congress/Congressional Committees
- ✓ POTUS; Executive Office of the President
- ✓ Federal and Independent Agencies subject to Presidential and Congressional Oversight:
 - NTIA
 - Federal Communications Commission (independent)
 - Federal Trade Commission (independent) (but not common carriers)
 - Department of Justice -- Antitrust
 - Department of State – International agreements
 - Department of Agriculture (Rural Utilities Service)
- ✓ States: Regulatory Commissions; Attorneys General
- ✓ International: International Telecommunication Union; Organization of American States, APEC, World Bank, others

U.S. Federal Communications Commission (FCC)

- ✓ Authority only as given by law
- ✓ Independent of three major branches of government
- ✓ Five commissioners, appointed by President (No more than three from President's political party)
- ✓ Subject to Administrative Procedures Act
- ✓ Decisions reviewable by court:
 - Must be constitutional
 - Cannot be "arbitrary and capricious"

FCC Regulatory Mission

- ✓ Regulate interstate and foreign commerce in communications.
- ✓ Make communication services available — so far as possible — to all U.S. residents without discrimination.
- ✓ Ensure a rapid, efficient, Nation-wide, and world-wide wire and radio communication service
- ✓ To promote competition and reduce regulation in order to secure lower prices and higher quality services
- ✓ To encourage the rapid deployment of new telecommunications technologies.

National Telecommunications and Information Administration

- ✓ NTIA Administrator is an Assistant Secretary of Commerce, and serves as President's principal adviser on telecommunications and information
- ✓ President's authority over spectrum held by the Administrator, through the Secretary of Commerce, and advised by the Interdepartment Radio Advisory Committee (IRAC)
- ✓ Administers Broadband Grants
- ✓ Responsible for "FirstNet" – Public safety wireless licenses and grant program
- ✓ Has research laboratory – Institute for Telecommunication Sciences

What Lawyers (and Economists) Conclude

- ✓ There is no such thing as spectrum.
- ✓ There is only spectrum management.
- ✓ Spectrum management creates and enforces rights.
- ✓ Government spectrum management is the law.