Reports

Journal of Community Informatics Special Issue: *Charting Sovereignty in the Digital Age: Tribal Leadership, Broadband, and the Rise of Tribal Digital Sovereignty*

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Glossary

2.5 GHz Rural Tribal Priority Window
A historic opportunity created by the FCC in 2020 that allowed Tribal Nations to apply for free, priority access to unassigned licenses for 2.5 GHz spectrum over their rural Tribal lands. This window ran from February 3 to September 2, 2020, and the policy recognized Tribal sovereignty over airwaves.

2010 National Broadband Plan
A comprehensive FCC report and policy roadmap, mandated by Congress, to accelerate broadband deployment, adoption, competition, and utilization across the United States. It specifically identified the severe lack of connectivity on Tribal lands as a critical issue and served as the foundation for several FCC reforms and initiatives.

Affordable Connectivity Program (ACP)
A federal benefit program that provided a monthly discount on internet service for qualifying low-income households, with an enhanced benefit for those on qualifying Tribal lands. (Note: The ACP stopped accepting new applications and enrollments on February 7, 2024.)

Bandwidth
The maximum amount of data that can be transmitted over an internet connection in a given amount of time, usually measured in megabits (Mbps) or gigabits (Gbps) per second. Higher bandwidth supports more users and more data-intensive applications.

BEAD (Broadband Equity, Access, and Deployment) Program
A $42.45 billion federal funding program created by the Infrastructure Investment and Jobs Act of 2021, administered by the National Telecommunications and Information Administration (NTIA). It provides funding to states and territories to plan for and deploy broadband infrastructure and adoption programs, prioritizing unserved and underserved locations, including Tribal lands.

Community Anchor Institution (CAI)
An essential community facility that requires high-capacity broadband. Examples include schools, libraries, hospitals, public safety entities, and Tribal government buildings. Connecting CAIs is often a primary goal of broadband expansion programs.

Computation (Stack Theory)
The distributed technical and organizational process through which digital systems sense, classify, store, transmit, and act on information across the stack's layers. In Bratton's framework, computation is a world-ordering function that structures relationships, resources, and authority, making it central to questions of digital sovereignty and jurisdiction.

Data Center
A facility that houses centralized computing and networking equipment, such as servers and storage systems. Tribes may develop local data centers to assert data sovereignty, keep data within their territories, and support local digital services.

Digital Divide
The gap between individuals and communities that have access to modern information and communications technology—including reliable, affordable high-speed internet service and the skills to use it—and those who do not.

Digital Twin
A digital twin is a highly accurate virtual version or model of a physical object, system, or environment—such as a water system, housing development, forest area, or transportation network. Digital twins are updated in real time using sensor and IoT data, so they reflect what is actually happening in the real world. This allows users to test ideas, plan projects, monitor conditions, and make informed governance decisions without risking the actual land, people, or infrastructure.

EBS (Educational Broadband Service) Spectrum
A band of wireless spectrum is historically licensed to educational institutions for instructional purposes. Rule updates have enabled broader use, providing Tribes with a potential resource to deploy wireless community broadband networks.

E-Rate
A federal program administered by the Universal Service Administrative Company (USAC) that provides discounts on telecommunications, internet access, and some internal connections for eligible schools and libraries.

ETC (Eligible Telecommunications Carrier)
A designation granted to service providers that authorizes them to receive federal Universal Service Fund (USF) subsidies, which help ensure that all Americans have access to reliable, affordable communication services. To qualify for support programs like Lifeline (for low-income individuals) or High-Cost funds (for rural areas), a carrier must be designated as an ETC by the relevant state authority or the FCC and agree to provide a defined set of supported services across a specified service area.

Ex parte
Communications at the FCC include written or oral presentations concerning the merit or outcome of an agency proceeding that are not recorded on the public record. Specifically, a written *ex parte* presentation is not served to all parties, and an oral one is made without providing all parties with advance notice and a chance to be present. The FCC's rules govern these communications—ranging from prohibiting them in "restricted" proceedings to requiring

public disclosure in "permit-but-disclose" proceedings—to ensure that all decisions are based on a fair, transparent, and complete public record.

FCC (Federal Communications Commission)
The independent US government agency responsible for regulating interstate and international communications by radio, television, wire, satellite, and cable.

Fiber Optic Cable
A technology that uses thin strands of glass or plastic to transmit data as pulses of light. Fiber offers very high speeds, reliability, and bandwidth, and is widely considered the "future-proof" standard for broadband infrastructure.

Fixed Wireless
A broadband service that delivers connectivity via radio signals transmitted from a tower to a fixed antenna on a customer's home or business. It is a common solution for serving rural and hard-to-reach areas.

Geographic Information Systems (GIS)
Digital tools and methods for capturing, managing, analyzing, and visualizing spatial data to understand patterns, relationships, and changes across landscapes. GIS are widely used in planning, environmental management, and governance, including land use, infrastructure, and resource stewardship.

Google Plus Codes
Free, open-source digital location codes (also known as Open Location Codes) that encode latitude and longitude into short alphanumeric “addresses.” Plus Codes help identify precise locations—especially in places without formal street addresses—for navigation, deliveries, emergency services, and other location-based services.

IKS (Indigenous Knowledge Systems)
Holistic, intergenerational systems of understanding that encompass ecological, cultural, spiritual, technological, and social knowledge rooted in Indigenous worldviews. IKS are governed by community-specific protocols, responsibilities, and authorities.

ILEC (Incumbent Local Exchange Carrier)
The traditional, established telephone company that provided local phone service in a particular geographic area before the Telecommunications Act of 1996 opened the market to competition.

IoT (Internet of Things)
A network of interconnected physical devices—such as sensors, appliances, vehicles, and

infrastructure components—that collect, exchange, and act on data. IoT systems create continuous flows of information between the digital and physical worlds.

ISP (Internet Service Provider)
A company or Tribal enterprise that provides individuals and organizations with access to the internet, often along with related services such as email, web hosting, and network security.

Last Mile
The final segment of a telecommunications network that connects the broader internet backbone (the middle mile) to end users' locations (homes, businesses, and community facilities). Deploying last-mile infrastructure is often the most costly and challenging part of reaching remote or sparsely populated areas.

Latency
The time delay in transmitting data packets from a source to a destination, measured in milliseconds (ms). Low latency is critical for real-time applications like video calls and some industrial or public safety systems.

Lifeline
A federal program that provides a monthly discount on phone or broadband service for low-income consumers, including an enhanced "Tribal Lifeline" benefit for those on qualifying Tribal lands.

Low Earth Orbit (LEO) Satellite
A satellite internet technology that uses constellations of satellites orbiting relatively close to Earth (typically a few hundred to a couple thousand kilometers above the surface). LEO systems generally offer lower latency and higher speeds than traditional geostationary satellite internet.

Middle Mile
The part of a broadband network that links the core internet backbone to local networks closer to end users (the last mile). Middle-mile infrastructure connects regional hubs, data centers, and local access networks, which then deliver last-mile service to homes and businesses.

NOFO (Notice of Funding Opportunity)
A formal announcement by a federal agency that grant funding is available for a specific program. A NOFO outlines key details such as eligibility, rules, funding priorities, and the application process.

NTIA (National Telecommunications and Information Administration)
An agency within the US Department of Commerce that serves as the president's principal advisor on telecommunications and information policy. The NTIA administers major broadband grant programs such as BEAD and TBCP.

ONAP (Office of Native Affairs and Policy)
An office within the FCC dedicated to ensuring that Tribal Nations and Native communities have a meaningful voice in FCC proceedings and that their communications needs are considered in policy decisions.

Planetary-Scale Computation
Planetary-scale computation means all the technology that connects the world—data centers, cloud services, satellites, broadband, phones, and the systems that govern them—working together as one giant network. It shapes who controls data, who has access, and how digital power is distributed. For Tribal Nations, it raises important questions about authority, jurisdiction, and digital sovereignty in a world where technology crosses every border.

Redundancy
The inclusion of extra components, links, or pathways in a network so that if one path fails, traffic can be rerouted through another. Redundancy improves reliability, resilience, and uptime for critical communications services.

Smart Infrastructure
Everyday systems—like roads, water lines, power grids, and public services—that are upgraded with sensors and connected technology so they can "talk," share data, and adjust automatically. This helps communities spot problems early, make faster decisions, and run services more efficiently and reliably across utilities, transportation, energy, and other essential systems.

Smart Rez
An Indigenous community using modern digital tools—like sensors, broadband, data systems, and automated tools—to run services more efficiently and respond to problems faster. The goal is to make daily life safer, smoother, and more reliable by using real-time information to improve things like traffic, utilities, public safety, and city operations.

Sovereignty
The supreme authority of a governing body over itself. Tribal sovereignty is the inherent right of Tribal Nations to self-govern, make their own laws, and manage their resources.

Stack (Bratton's Stack Theory)
The stack is a way of understanding modern technology as a set of layers that all work together—from the physical world, to cloud systems, to cities and networks, to addresses and interfaces, all the way up to the people using devices. Bratton's point is that these layers form a single planet-wide system that connects digital, physical, and political life. Thinking in terms of the stack helps explain how infrastructure and platforms shape governance, jurisdiction, and sovereignty because decisions made in one layer affect all the others.

TBCP (Tribal Broadband Connectivity Program)
A roughly $3 billion federal grant program administered by the NTIA specifically designed to support broadband deployment, affordability, telehealth, distance learning, and digital inclusion on Tribal lands. The program is funded through the Consolidated Appropriations Act and the Infrastructure Investment and Jobs Act and continues to evolve through new NOFOs and policy updates.

TEK (Traditional Ecological Knowledge)
A cumulative, place-based body of knowledge, practices, and ethical principles developed by Indigenous peoples through long-term relationships with lands, waters, and ecosystems. TEK guides environmental stewardship, resource management, and community well-being.

Tribal Resolution of Consent
A formal document passed by a Tribal government's governing body that grants permission for a specific action, such as an ISP applying for funding, deploying infrastructure, or using Tribal lands or resources consistent with the Nation’s laws and decision-making processes.

Trust Relationship
The legal and moral obligation of the US federal government to protect Tribal self-governance, lands, assets, and resources, based on treaties, statutes, and court decisions. This trust responsibility underpins many federal-Tribal interactions and programs.

TSK (Traditional Spatial Knowledge)
Indigenous expertise in mapping, navigating, interpreting, and stewarding land, water, and territorial relationships. TSK is grounded in lived experience, oral history, cultural practice, and longstanding spatial governance systems.

Universal Service Fund (USF)
A system of federal subsidies managed by the FCC and administered by USAC to promote access to telecommunications and broadband services for all Americans. The USF supports programs like E-Rate and Lifeline.

USAC (Universal Service Administrative Company)
The nonprofit corporation designated by the FCC to administer the programs of the USF.

UX Design (User Experience Design)
The practice of designing digital products, interfaces, and services to optimize usability, accessibility, and user satisfaction by aligning technical systems with human needs, behaviors, and contexts.

VoIP (Voice over Internet Protocol)
A technology that enables voice calls to be made using a broadband internet connection instead of a traditional analog phone line.

Wireless
A broad term for telecommunications that use radio waves or other non-wired means, including cellular, Wi-Fi, fixed wireless, and satellite.

Wireless Spectrum
The range of radio frequencies used to transmit sound, data, and video through the air. It is a valuable public resource licensed by the FCC.