COMMUNITY WIRELESS NETWORKS

Affordable High-speed Public Broadband

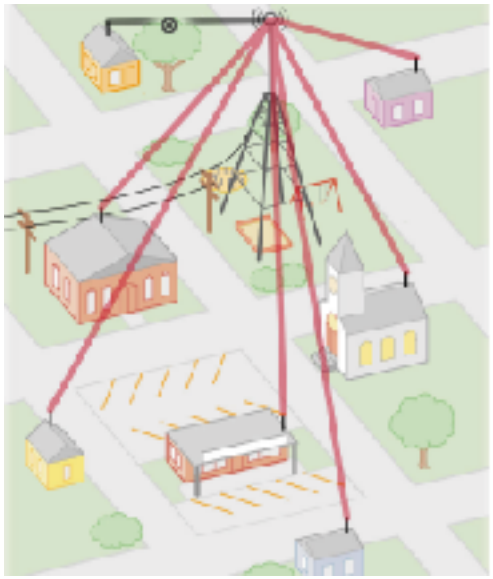
Wireless offers many advantages over wired systems for building new broadband networks. Of all the wireless alternatives, a dynamic, wireless mesh using open sources and open standards offers greatest adaptability, highest capacity, lowest cost, and greatest benefits to the community. Each of the four facets of this "best practice network" — wireless, mesh, dynamic and open — is critical to building the next generation of community-wide communications networks with public service priorities.

WIRED

Wired technology has dominated the communications landscape since the age of the telegraph. In wired networks, cables strung along telephone poles or buried underground deliver services through physical connections to individual buildings. These wired networks are very costly and require enormous amounts of labor to deploy and maintain. Although antiquated, wired technology is deeply entrenched in current communications systems. It continues to be both expensive and disruptive to build.

WIRELESS

Over the next decade, cost-saving wireless technologies will inevitably replace wired systems. For 1/10th to 1/100th the cost of tearing up roads or setting up poles, rooftop antennas with "smart radio" technology can be easily installed to deliver services using the airwaves. As more users come online and the wireless cloud spreads over an entire community, the technology becomes cheaper, faster, and more robust.

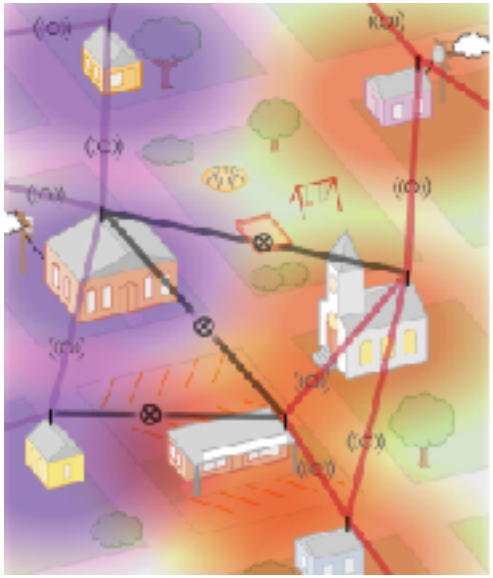


HUB & SPOKE

Like the spokes on a bicycle wheel, "hub-and-spoke" wireless systems connect users with line-of-sight antennas to a centrally-located broadcast tower. Clients who cannot see the hub from their building cannot join the network. These networks are resource-intensive. They require a tower, specialized broadcasting equipment, and constant maintenance of the hub, an extremely vulnerable, single point of failure.

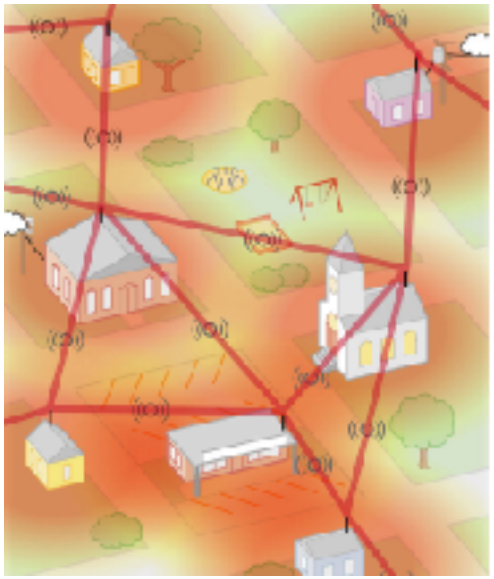
MESH

Robust and reliable, mesh wireless systems offer multiple points of connection to the network and no central tower. Mesh users can bypass obstacles like hills and trees by using different signal paths. Mesh networks are easily expandable at very low cost, and they have no single point of failure. Mesh networks also feature shorter distances between nodes, which means each antenna can broadcast at lower power, creating less interference and allowing more users to communicate simultaneously.



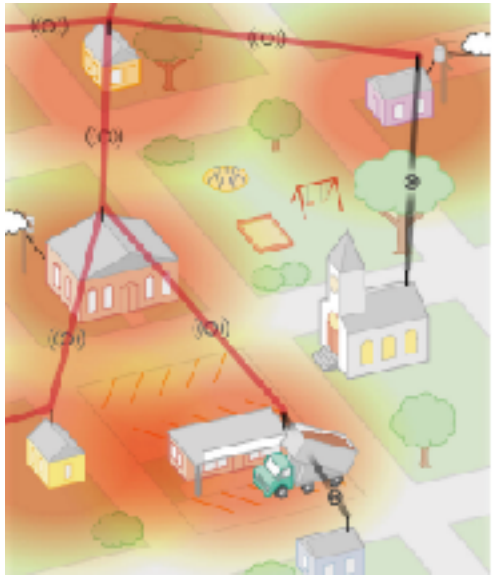
CLOSED

Proprietary or "closed" networks do not communicate with each other. Even in a dynamic mesh system, these networks create unconnected wireless islands within a single neighborhood. Clients are often forced to overpay for incompatible equipment because only one manufacturer makes it. Proprietary network software stifles innovation and collaboration among entrepreneurs and programmers. Local developers are prohibited from modifying closed software with new innovations, fixing flaws, or closing security holes.



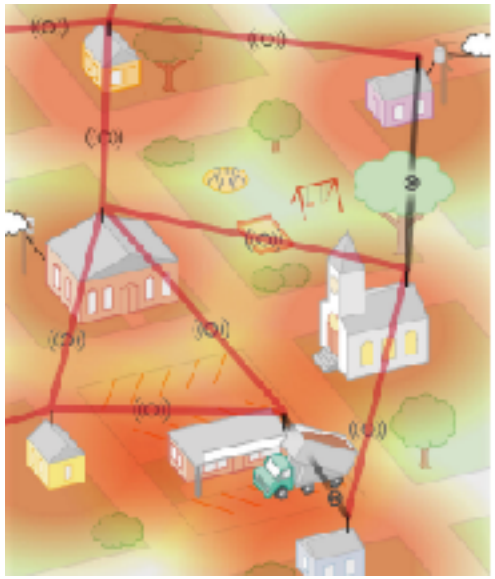
OPEN

The success of open access Internet technologies demonstrates how open standards and open source provide a foundation for building new wealth, a platform for innovation, and a basis for low-cost computing solutions. Open standards lead to interoperability of products, a necessity for efficient use of the public airwaves, and result in lower costs to consumers. Open source code lends itself to innovation and development, a huge advantage for local developers with new ideas for community applications.



STATIC

Once a cutting-edge technology, static wireless networks are now seen as difficult to plan, build, manage, and expand. Developers must map out in advance the pathways that network signals will follow to ensure reliable service. This means that if an obstacle — like a growing tree — blocks a user's connection, or if new users wish to come onto the network, the entire network may need to be reconfigured to enable signals to reach them. It is an inflexible system that is easily disrupted. The result is often an expensive, inefficient network with severe limitations on expansion.



DYNAMIC

A dynamic wireless network constantly adapts its wireless links to cope with new conditions. It automatically adjusts its pathways to integrate new homes and businesses and offers higher capacity to a wider coverage area. This kind of network is strengthened as the subscriber base grows. It changes patterns of use to bypass interference, blockage, or network congestion. Dynamic networks achieve higher resilience and flexibility than comparatively rigid and fragile static networks.

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FOR MORE INFORMATION

To learn more about the technology involved in community wireless networks, or to see an example of such a network in action, visit **www.cuwireless.net**. To learn more about the importance of such networks for democratic communications, or to learn more about policies that can support such networks, visit **www.freepress.net/wifi**.