

Open Access in Today's Cloud World

Redefining the Meaning of Open Access. Traditional Open Access Networks Lack Sufficient Automation and Software Control to Enable a Dynamic Marketplace.



Communications Should Work Like Roads

An important strategic question for Cities, Counties, and States to consider is the significance of communications infrastructure to their future vitality and livability. Is it possible that communications infrastructure will be as important to society during the next 100 years as roads have been over the past 100 years?

The dominant communications model in the United States today is one where the physical infrastructure and services are intertwined and controlled by incumbent service providers. The result of this approach is that the company who controls the infrastructure also controls the services. This leads to a limited number of services, a lack of competition, inflated prices, scarce bandwidth, and throttled innovation in services. The current practice of building separate communication systems for each carrier is analogous to building one set of physical roads for UPS and another set of roads for FedEx (See Figure 1). This is a flawed model. An alternative approach is for municipalities to own and control communications infrastructure and make it open to competition and innovation by any service provider – the same way roads are available for use by the public.



Closed Broadband Networks
[Traditional Incumbent Model]



Open Broadband Networks
[Infrastructure as a Utility]

Figure 1

As municipalities consider the importance of communications infrastructure and services to the future vitality of the community, it is critical to carefully consider the implications of having incumbent carriers control both the communications infrastructure and services. As cities plan for the digital future, the same model that is used for roadways should be adopted for communications.

Open Access is the name for a communications model where any service provider is allowed to deliver services over open infrastructure. This approach has been implemented in both Europe and the United States. The value of the Open Access model is that it gives consumers choice and it can bring competition to the market for services; two attributes that are painfully missing in many communities.

Open Access as a Marketplace

The networks which have successfully implemented Open Access models to date have primarily enabled multiple options for Internet Service Providers (ISP's). The ideal Open Access implementation is one which creates an open marketplace with many services and is not just a marketplace for ISP's. Ebay and Amazon are examples of digital marketplaces where buyers and sellers can dynamically interact to exchange a wide variety of goods and services. Traditional open access networks lack sufficient automation and software control to enable a dynamic marketplace.

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In a robust digital marketplace, service providers should be able to self-provision their services onto the network without significant time or expense. Subscribers should find competitive options for the things they want to buy and the marketplace provisioning portals should be web-based and easy to navigate. Services should be available on-demand with self-service automation and pay-as-you-go pricing models. A true digital marketplace will grant anytime-anywhere-any device access. The internet is the best example of a dynamic, worldwide marketplace for goods, services, ideas, and information.

One of the remarkable things about the internet is that it is a global network made up of thousands of independent, interconnected networks which have agreed to adopt specific communication standards and protocols. As Figure 2 illustrates below, the internet essentially provides transport to and from cloud-based services. Because of the internet, consumers are now accustomed to accessing email, banking, music, movies, shopping, and social media from a cloud.



Figure 2

The internet became what it is in large part because it enabled a marketplace that is open to innovation, open to competition, provides open access to an extraordinary number of goods and services and it is easy to use. Given the internet's success, why is another marketplace needed?

The current Internet marketplace cannot provide the level of security, privacy, and reliability needed for many services and applications. To solve this, a next generation digital marketplace is needed for things like Smart City, Smart Home, Public Safety, Emergency Communications, Telemedicine, Aging-in-Place applications and many Internet-of-Things devices. Additionally, some services, because of their nature, will require high bandwidth, local resilience and low latency. In this new marketplace, ISP's will finally have to compete because they won't control the infrastructure.

Municipalities are the ideal infrastructure provider for this next generation marketplace because municipalities will keep this network open and many of the solutions that will run in this marketplace are essential for communities to be vibrant. The transport to these cloud-based services will happen across virtualized private networks.

Network virtualization creates logical (software based) networks capable of supporting a large number of independent virtual slices or virtual environments using a single network infrastructure resource. To understand this, imagine a single strand of fiber optic cable that is 'sliced' end to end, creating any number of virtual fiber strands. Visualizing these virtual strands, a series of isolated virtual channels or slices can be seen, each capable of providing an independent network service over a separate virtual fiber inside a single physical fiber optic strand (see Figure 3).

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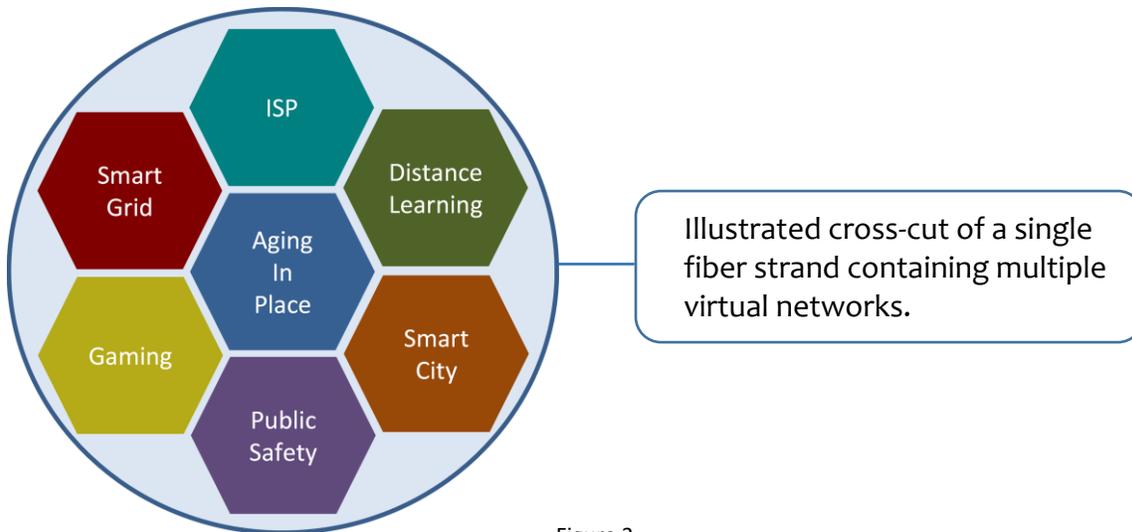


Figure 3

The alternative to using network virtualization technologies is to provision purpose-built or independent physical networks for each independent service. That is what happens today for things like traffic management, public safety, and closed circuit camera networks.

A much more affordable, manageable, and viable solution is for Cities, Counties, Rural Co-Ops, and States to build robust fiber optic infrastructure for their communities – in the same way they have built infrastructure for water, sewer, and roads. Then these public infrastructure owners can leverage the investment for the community's benefit by deploying any number of desired services in a Dynamic Open Access model to provide this secure, private and reliable next generation marketplace.

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