

Infrastructure theory and access to essential IP

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Upstream infrastructure and downstream applications

Layer	Examples	Property regime	Legal doctrines
Application	Cars Phones Dishwashers Laptops Email Romeo and Juliet MS Office	private property exclusive discriminatory	property exclusive IP rights
Infrastructure	Highway network Phone network Electrical grid Internet TCP/IP, HTTP Ideas (“star-crossed lovers”) Windows XP/Vista	public/regulated ownership open access* non-discriminatory	genericide (TM) idea-expression (C) scenes a faire (C) natural principles (P) eBay v. Merc Ex. (P) eminent domain (RP) essential facilities (AT)

* All references to open access regimes are directional, not absolute.

“Maximizing overall productivity” is a common concern of IP and antitrust

- All property rights have a utilitarian component
 - Particularly pronounced in exclusive rights to non-rivalrous goods
- The IP laws aim to maximize overall productivity by applying exclusive property rights to applications and (to some extent) open access regimes to infrastructure
 - Open access to applications (“cars”) and exclusive access to infrastructure (“highways”) would stifle productivity
 - Upstream exclusivity may inhibit downstream productivity (e.g., exclusive rights to calculus, 12-bar blues)
- Antitrust shares the utilitarian goal of maximizing productivity (efficiency)

Refusals to deal and the essential facilities doctrine

- The infrastructure/application divide fuels the continuing antitrust debate over “refusals to deal”
- Refusal to deal cases are ultimately about replacing an exclusive property rule with an open access regime
 - Antitrust law thus modifies property law defaults; it relaxes exclusive control over infrastructural upstream assets to increase downstream productivity
- Two doctrinal strains
 - “Disruption of existing supply” (Aspen Skiing, Commercial Solvents)
 - “De novo access to an essential facility” (MCI, Otter Tail, IMS, MSFT)
- “Essential facility” is the antitrust proxy for infrastructure

What is infrastructure?

A demand side view

1. The resource (R) can be shared
 - R is at least partially non-rival (e.g., sharing of a car is rival, of a road is subject to congestion, of an idea is entirely non-rival)
2. R is an intermediate good (not merely for consumption)
3. R enables diverse downstream production of commercial, public, and/or social goods
 - Production of (public/social) downstream goods generates positive externalities the value of which is not fully reflected in demand for R
 - E.g., internet access (= R) enables people to email, debate, run political campaigns, contribute to and use Wikipedia, etc. (mixed infrastructure)
 - Demand for a port (= R) is captured to a greater extent by downstream firms (primarily commercial infrastructure)

Applying the infrastructure definition (examples)

Element	Roads	Stadium	Port	Telco Network	Internet
R can be shared	Yes. Subject to congestion	No. Not at the same time	Yes. Subject to congestion	Yes. Subject to congestion	Yes.
R is primarily an intermediate good	Yes	No	Yes	Yes	Yes
Enables wide range of productive downstream uses, the aggregate value of which is not fully reflected in demand for R	Yes. Trucking (commercial), visit friends (social), rally (public)	No, at least not in the case of a sport/concert event. The event is consumed in a uniform fashion.	Yes. But the downstream uses are primarily commercial in nature. Thus demand for R probably reflects value more closely.	Yes. Voice and data carry/enable transmission of ideas, contacts between friends, families, businesses, etc.	Yes. End user innovation, content creation, search, research, education, friendships, family, buy/sell, etc.

Assets may *become* infrastructure

- A resource may turn out to enable broad and varied downstream productivity (e.g., an operating system)
- When productive downstream uses convert purely private assets into infrastructure various legal regimes react by relaxing exclusive rights
 - Trademark: genericide (“Aspirin,” “Kleenex”)
 - Copyright: scenes a faire (“Swiss bank account”), merger doctrine
 - Real property: eminent domain, custom
 - Antitrust: essential facility
 - Patent: none (least responsive to change in downstream use patterns)

Building a modern essential facilities doctrine

- Infrastructure test (demand focus)
 1. Partial non-rivalry
 2. Intermediate good
 3. Enabling varied downstream productivity (hinted at in the EU “emergence of new product” criterion)
- Essentiality test (supply focus)
 4. Monopoly power (US: §2, EU: Art. 82)
 5. No reasonable duplication
 6. Refusal to share on non-discriminatory terms
 7. Downstream competition with the resource owner

Applying the infrastructure test to *Aspen, Trinko, and MSFT*

	Infrastructure test (additional demand-side filter, more restrictive)	Essentiality test (more relaxed, applied to infrastructure only)	Comment
Aspen Skiing	No. Access to a ski slope doesn't enable broad, unspecific downstream productivity	Yes	Different outcome. No "forced sharing" under an infrastructure test
Trinko	Yes. Phone network is a prime example of infrastructure; supported by partial regulation	Yes. Degraded service is a refusal to share.	Different outcome. Non-discriminatory access should have been required by the antitrust laws.
MSFT (EU)	Yes. IP is non-rivalrous. Broad downstream productivity gains are highly likely.	Yes. No reason to confine competition to "all or nothing" server installations.	Same outcome. IP standards are often infrastructure, reflected in common RAND commitments.

How is an infrastructure-aware essential facilities doctrine different?

- Reduced liability for denying access to purely commercial infrastructure
 - As downstream producers internalize most benefits, there is sufficient demand in upstream markets
 - Lower risk of under-supply of infrastructure
 - Strict application of the MCI/MSFT standards
- Potentially increased liability for denying access to mixed infrastructure (“public interest layer”)
 - Platforms, networks, standards, ideas, etc. that enable broad downstream positive externalities
 - Risk of under-supply (market failure)
 - More liberal application of the MCI/MSFT standards

Recommended reading

- Frischmann & Weber Waller, Revitalizing Essential Facilities, 74 Antitrust L.J, 1 (2008)
- Frischmann, An Economic Theory of Infrastructure and Commons Management, 89 Minn. L. Rev. 917 (2005)
- Lee, The Evolution of Intellectual Infrastructure, 83 Wash. L. Rev. 39 (2008)