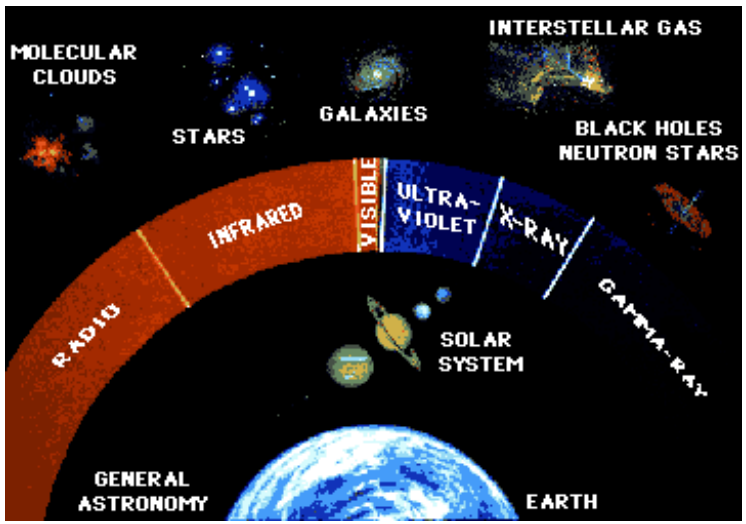
Wireless: the Thin Edge of the Wedge

Socio-Economic Impacts of Mobile/Wireless Technologies
GLOCOM, Tokyo
November 21, 2002



By David Isenberg

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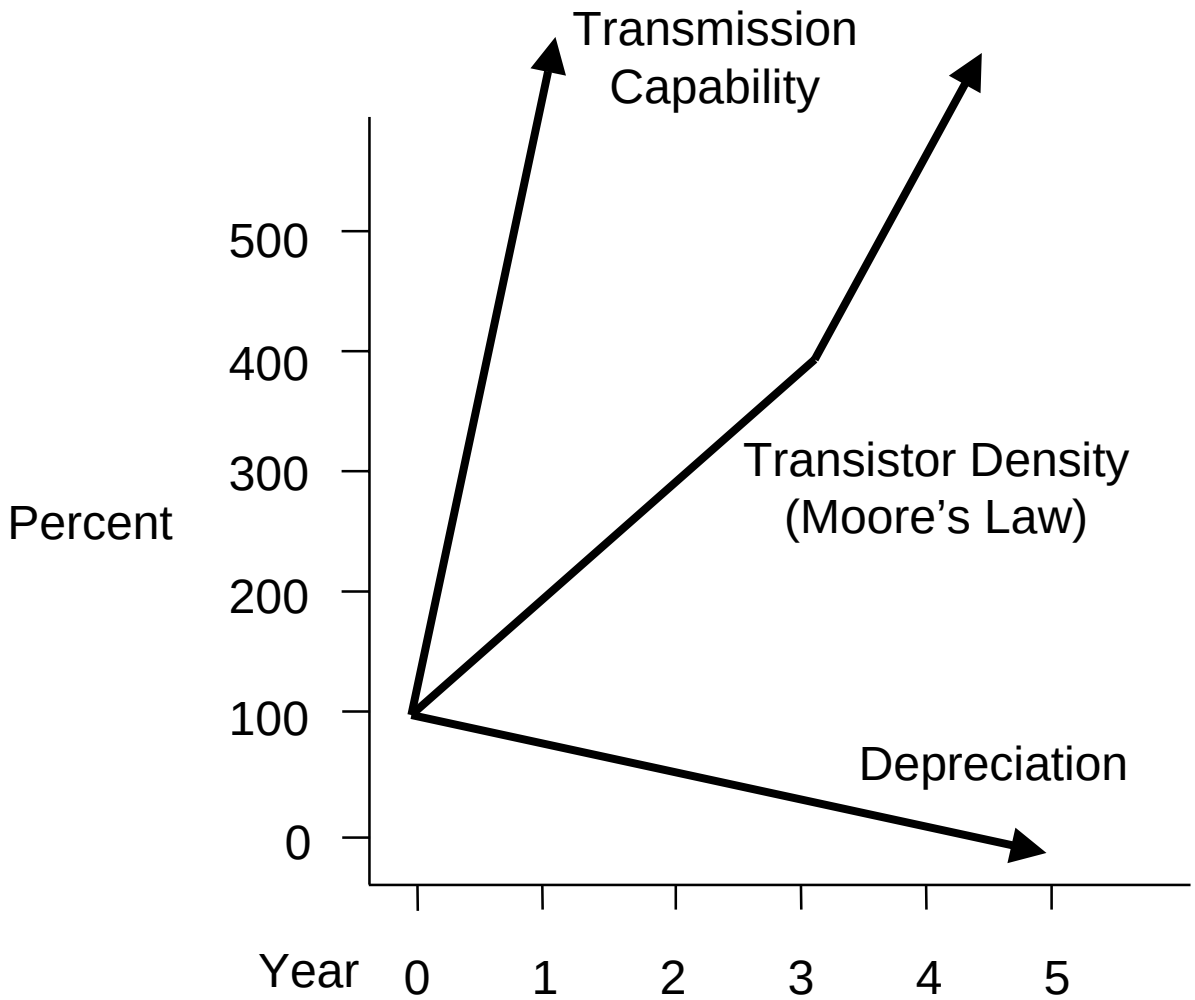
Factors Driving the Stupid Network . . .



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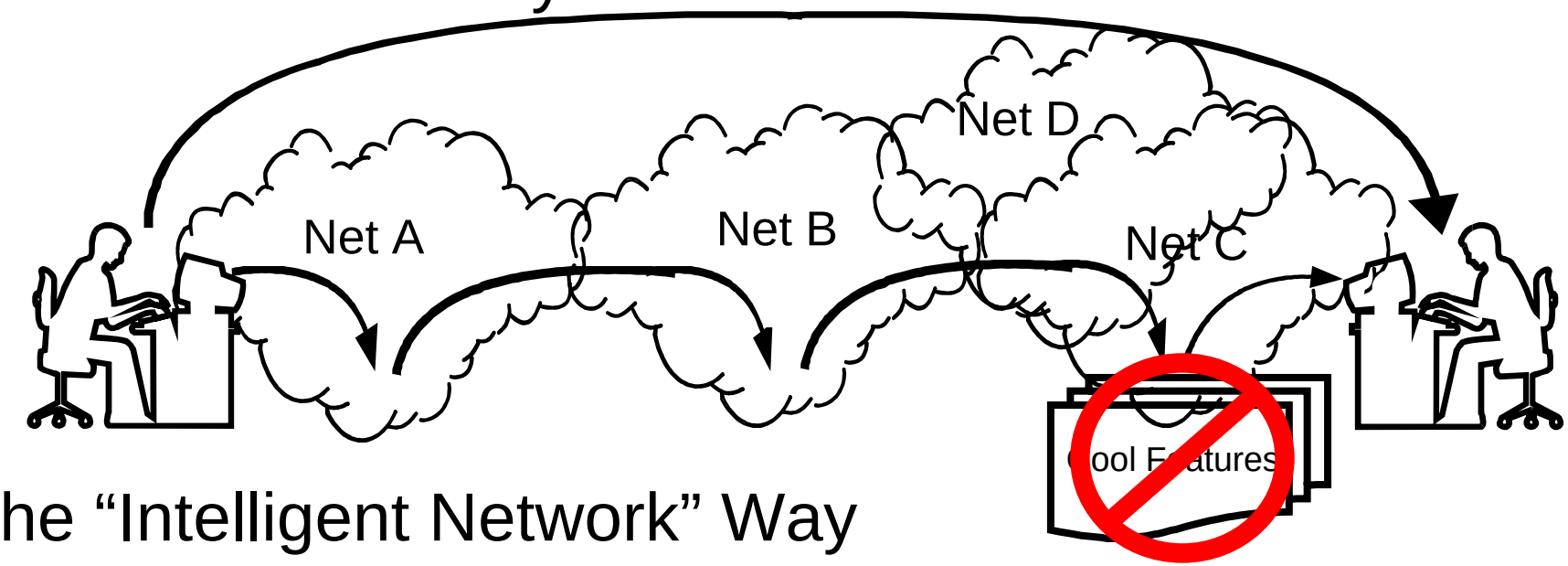
The End-to-End Principle

The End-to-End Way



The “Intelligent Network” Way

Internetworking shifts control from network owner to end user.

Telco-style vertical integration inhibits innovation

Today's winner applications were not created by telcos

- email,
- the Web itself,
- e-commerce,
- audio-on-demand,
- instant messaging
- Internet telephony
- Web logging
- et cetera

Important exceptions: DoCoMo, AOL, Telephony itself

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New Business Models to Support Innovation

Telephone company?

- Difficult transition to “horizontal” model
- (3G follows telephone company model)

Cable company (MSO)?

- Difficult to give up old video model

Municipality?

Utility?

New kind of company?

Customers?

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Wireless: the thin edge of the wedge

Progress will lay foundation for new end to end network

Already “unlicensed spectrum” is disruptive to carriers

US FCC Spectrum Policy Task Force

Report released November 7, 2002

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What the SPTF Report Means

Two concepts promise disruptive change:

- Regulate by time
- “Exclusive use” and “Commons” models

These will make important opportunities for new companies.
(as important as “unlicensed spectrum”)

Long process ahead (NOI, NPRM, Rule Making, Maybe new law)

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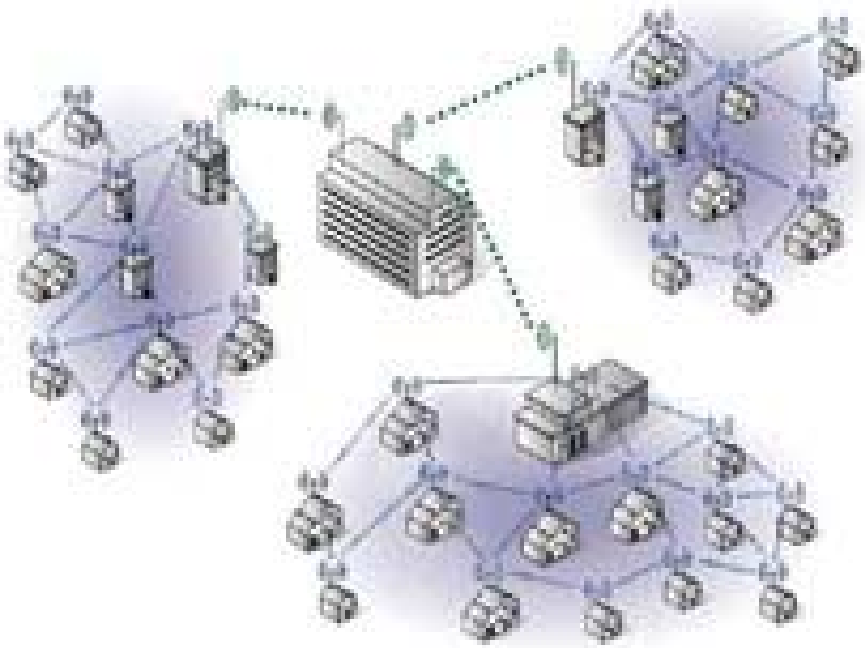
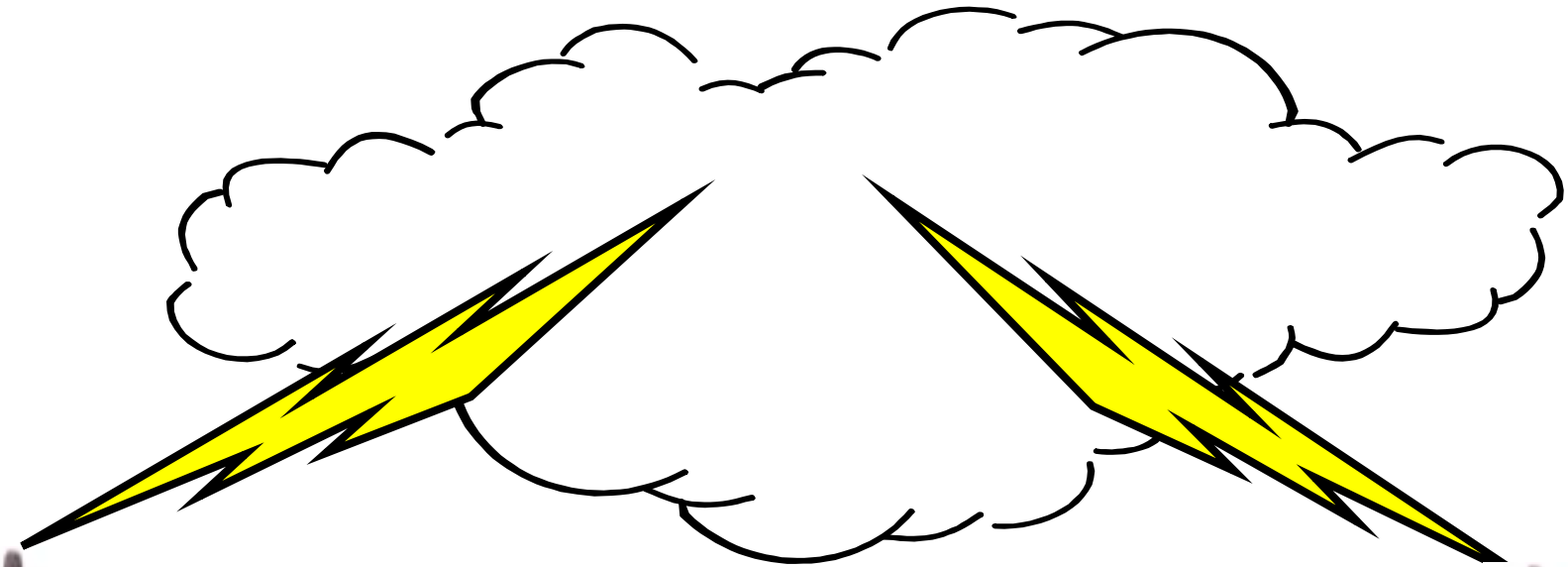
Mesh (Multi-Hop) Networks



Let customers own the network infrastructure without carriers
Each new customer adds redundancy and throughput
Can support teledensities like New York City
Problem: latency

Intelligence at the Edge!



Vanilla Compaq
Standard Microsoft PocketPC OS
Vanilla 802.11b
Vanilla, **Unmanaged** Internet
“Shrink Wrap” Telephony Application

Better than “Toll Quality”

No Telco!

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It Takes Smart People to Build the Stupid Network

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"Most of the important future communications applications haven't been discovered yet."

Jonathan Rosenberg
Co-creator, SIP
May 2001

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U.S. Spectrum Policy

1912: Radio transmitters must be licensed (U.S. Law)
1927: FCC given power to regulate “interference” (U.S. Law)
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1985: 2.5 GHz unlicensed spectrum (FCC Regulation)
1997: 5.8 GHz unlicensed spectrum (change to FCC Regulation)
.
.
.
June, 2002: FCC Spectrum Policy Task Force (recommendations only)
October 2002: FCC SPTF Report (recommendations only)
December 2002: FCC Notice of Inquiry

2003: Notice of Proposed Rule Making?
2003: Additional Laws?

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Spectrum Policy Task Force Report

November 7, 2002

Observations:

- White Space Opportunities
- Vastly Improved Technologies
- Rights and Responsibilities of Spectrum Owners Not Clear

Recommendations:

- Give spectrum users more flexibility about how to use spectrum
- Define clearly rights and responsibilities of spectrum users
- Rule changes for flexible power limits in less congested areas
- New concept: “Interference Temperature” to regulate interference
- Regulate by time (in addition to place, frequency and power)
- Use three models for regulating spectrum:
    - Command and Control
    - Exclusive Use (Private Property)
    - Commons (Unlicensed, Public Good)

Blonder's Law

If new technologies promise improvements greater than 4x
they tend not to get funded because they are seen as too risky.

If they promise less than 2x, they are not funded
because they offer too little economic benefit.

So each new generation of products -- be they jet engines,
software or chicken broilers -- brings about a measured, highly
predictable benefit.

Greg Blonder
Barron's
11 Nov 2002

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