

Viral Communications



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Viral WG Agenda: 6/05

- Introduction (Lippman)
- Viral Architectures (Kwan Lee)
- Vid Torrent (Dimitri Vyzovitis)
- Opportunistic Relaying (Aggelos Bletsas/Lippman)
- Efficient Multicast (David Reed)
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Viral Communications: Industry Involvement

- Recruited Robert Hadaway (Nortel) as co-chair
- Series of Industry presentations on what viral communications means
 - Motorola, France Telecom, Nokia, Nortel
 - Posted on wiki web site:
 - <http://aphex.media.mit.edu/wiki/tiki-index.php>
- Selected 3 areas of future research focus:
 - Viral Aspects of Seamless Mobility
 - Social networks and human interaction in viral contexts
 - Nomadic, viral meeting services (collaboration, coordination, sharing)
- Resume discussions August

Viral innovation

Scalable

Incremental

Contributory

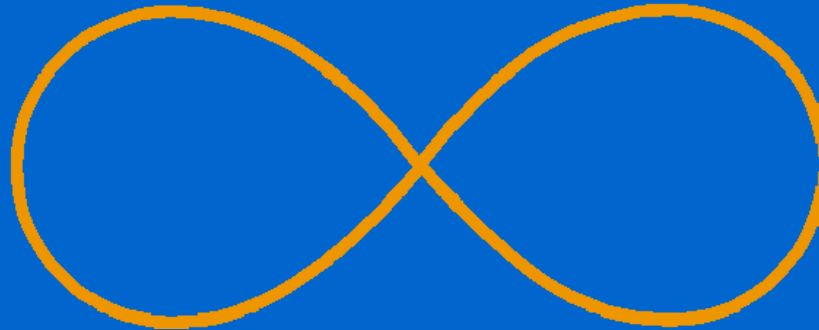
Viral systems are innovative through modularity and distribution of capability -- the intelligence is at the ends

e.g.: Fax machines, Internet

Lippman's helix

Legitimate:

Economic
Centralized
(Scalable)



Viral:

Optimized for innovation
Low risk
Agility

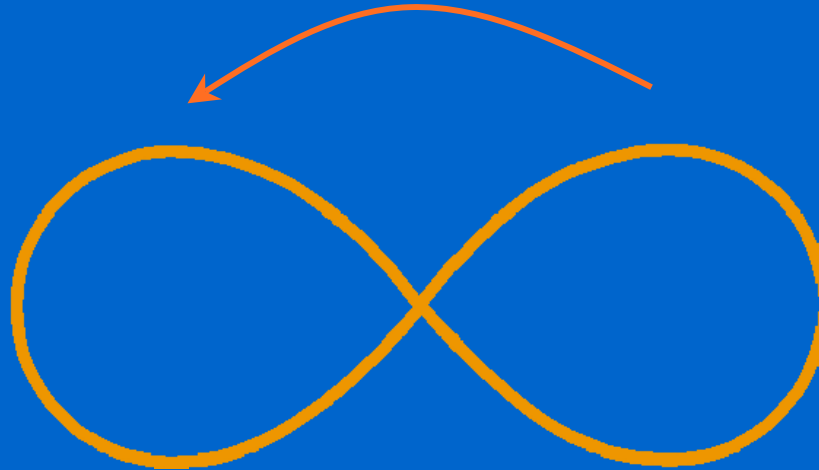
After Fine

Going legitimate

When?
Base Techs

Legitimate:

Economic
Centralized
(Scalable)

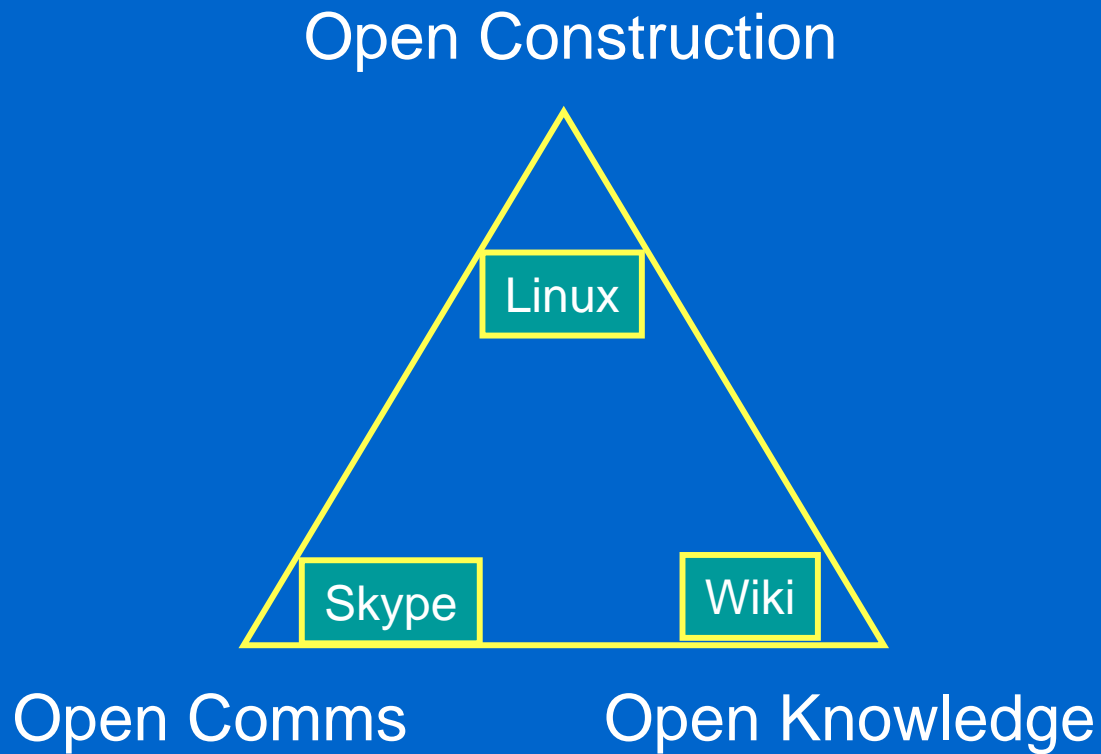


Viral:

Optimized for innovation
Low risk
Agility

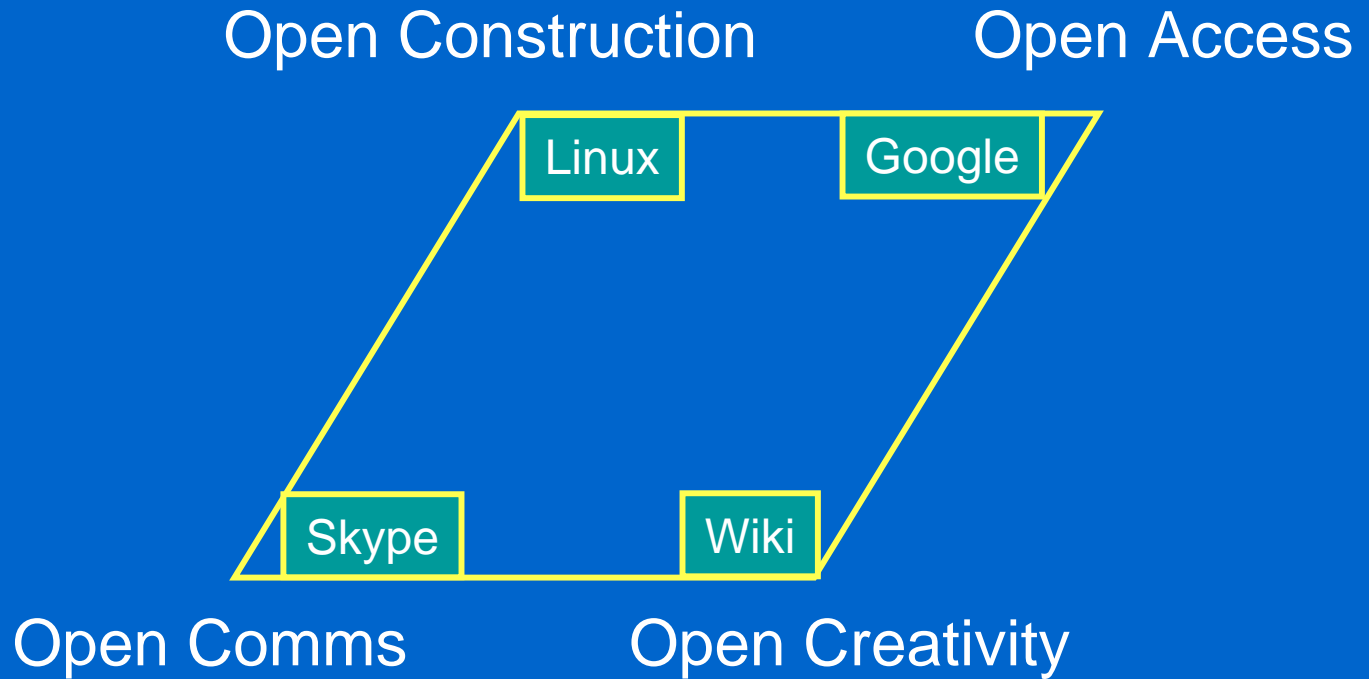
Magic is when tech is
in sync with society

Viral organizations



Brazil, today

Viral organization (2)



More than telephone calls

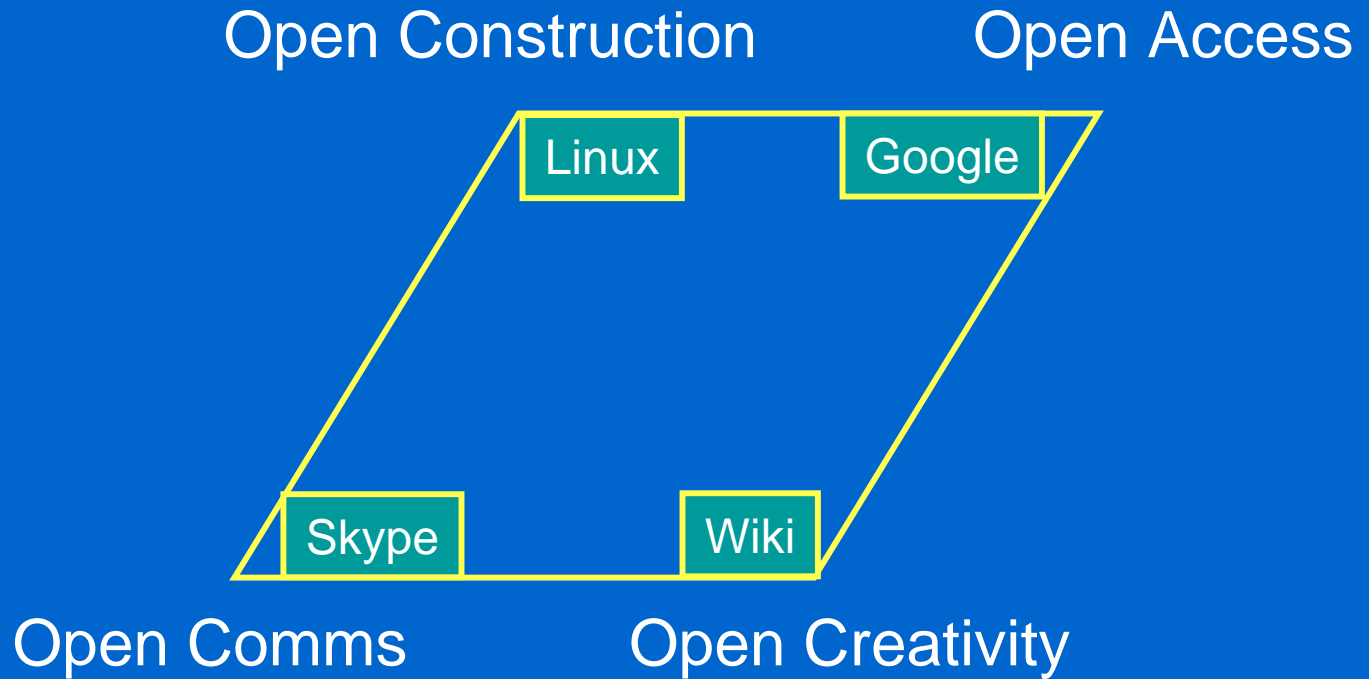
Health

Mobility

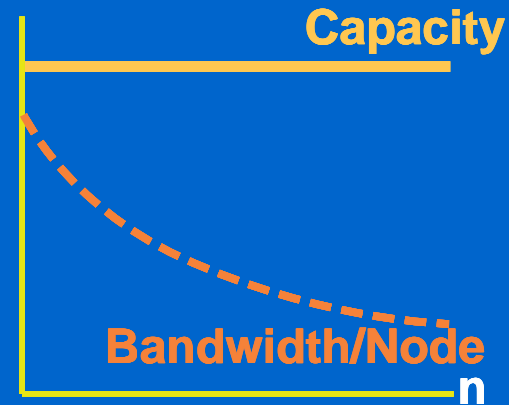
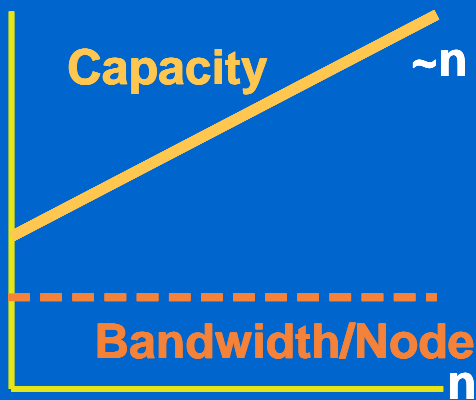
Efficiency

Hundred Dollar Laptop looks at
the extremes of personal
computing and communications

Viral organization (2)



Innovation architectures



Open systems such as PCs gain capacity with more units, traditional communications systems *divide* fixed capacity among elements.

Can we make communications systems (telephones, networks) that are viral and economic?

Social Context

Exploding myths

Spectrum Capacity

Interference

Channels

Will 1920's engineering
guide 21st century
products?

Radio magic

**Radios costing less
than radio waves**
(Breadcrumbs)

There are no receivers
(Receiving costs more
than transmitting)

There is no 4G. There
are no more G's

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Content Cooperation

2002: Mayhem Protocol

2003: Local Intelligence

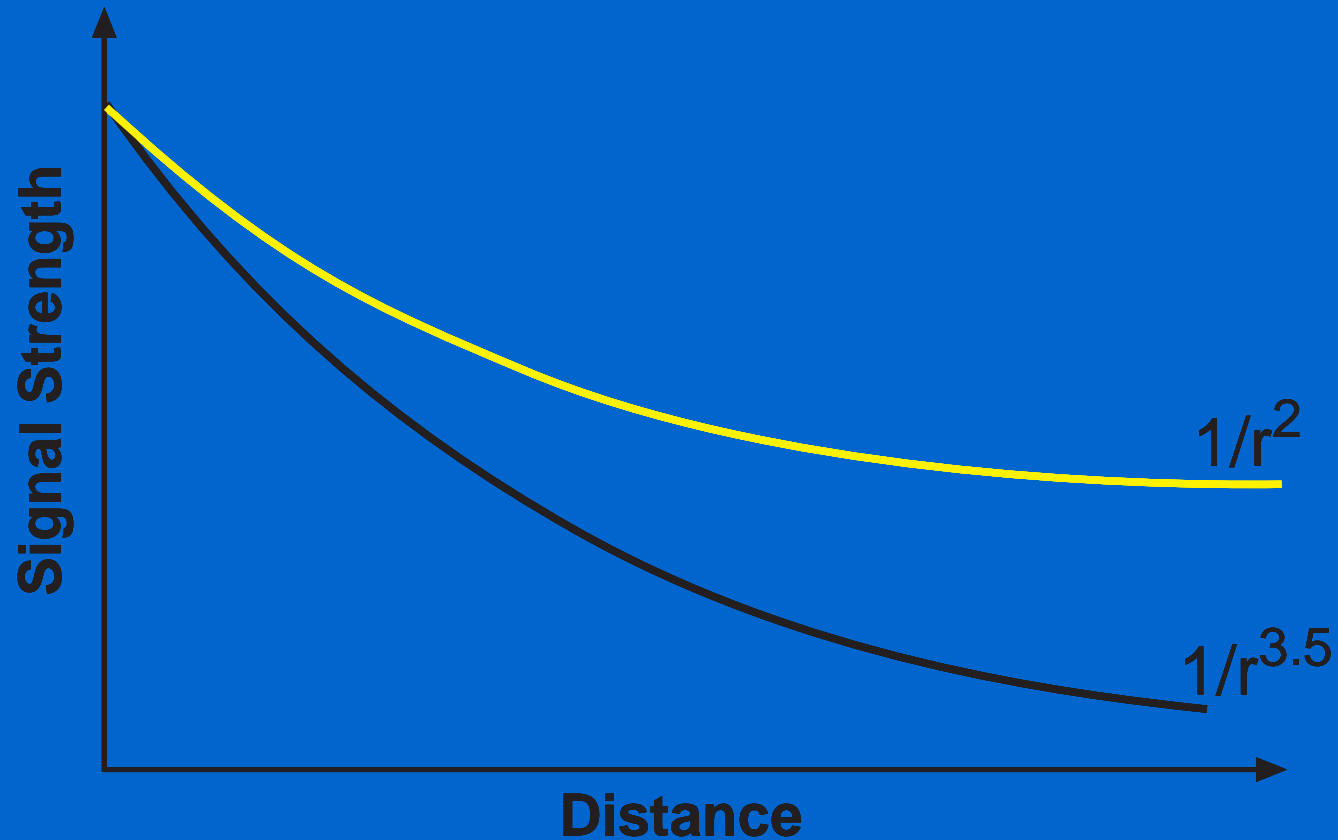
2005: Vid Torrent



Viral WG Agenda: 6/05

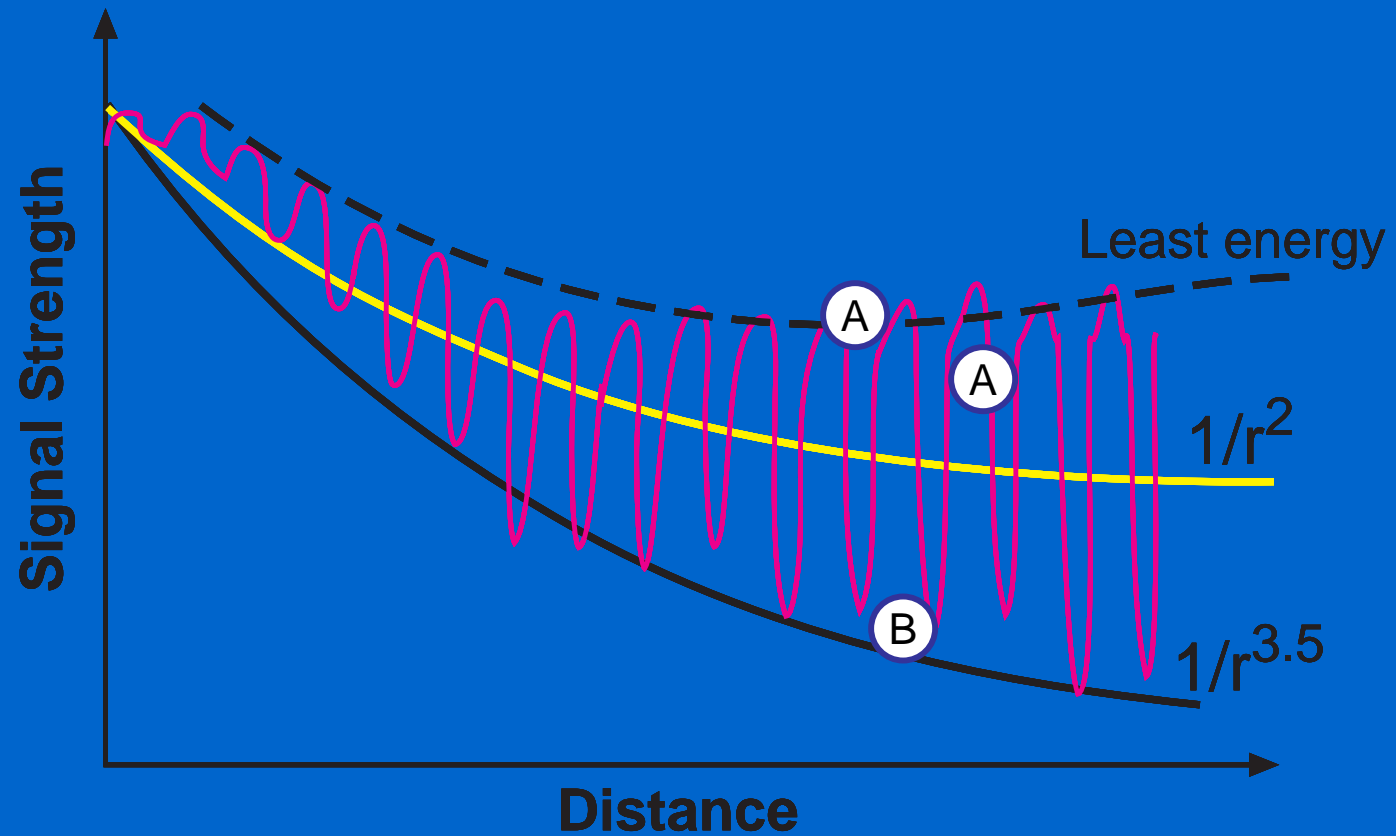
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Engineering guidelines (old)



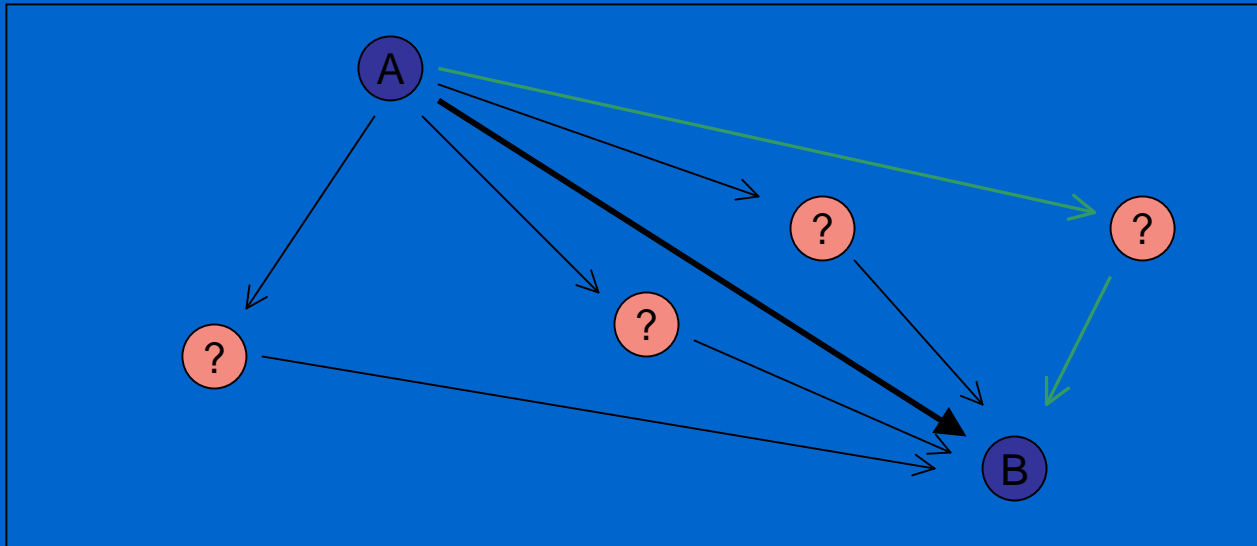
Free space is well known, other cases are not

Radio in the real world



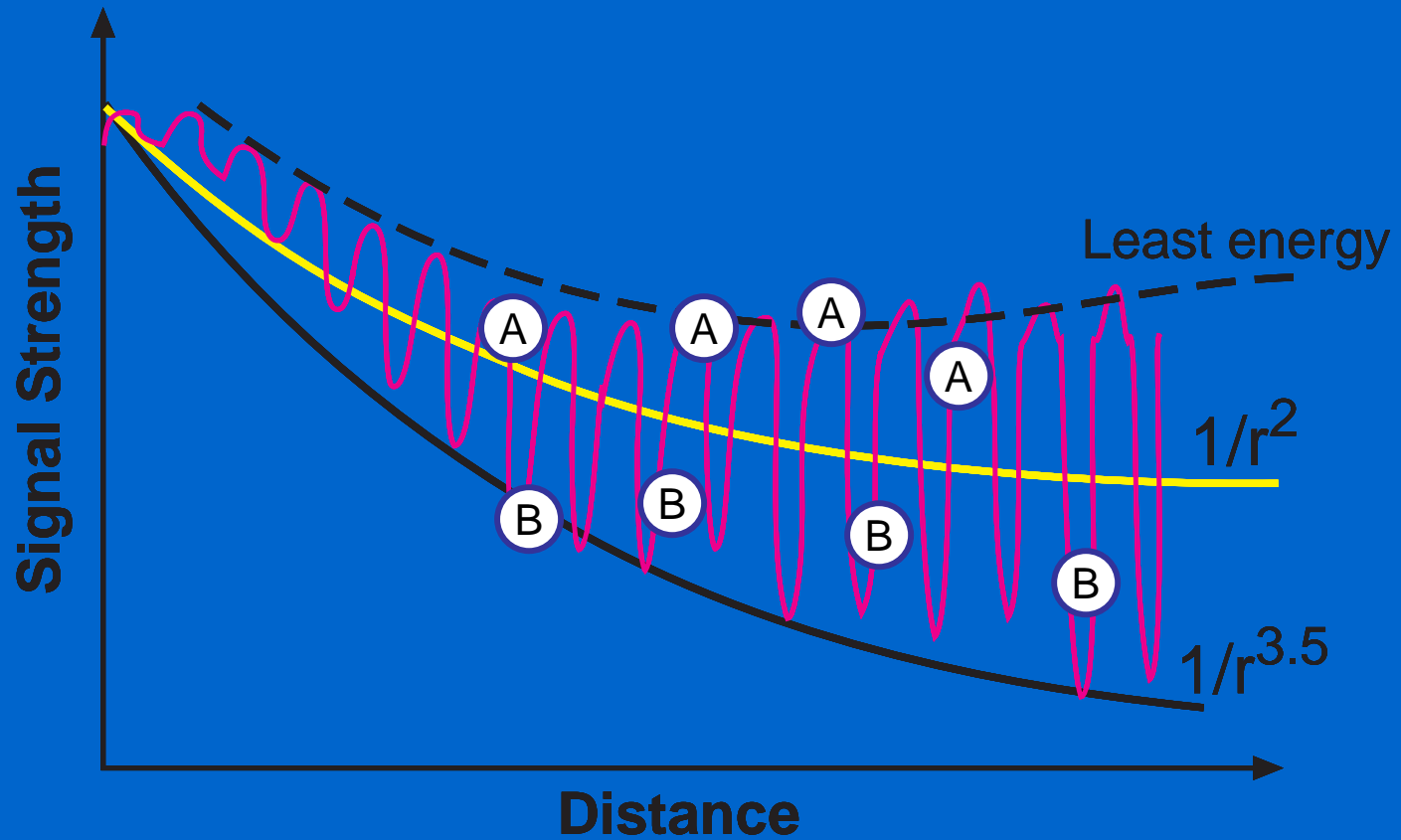
Small movements make large changes

Lesson of 2004: Propagation



- Model:**
- (1) Fill the space with radios (versus power)
 - (2) They determine best case relay
 - (3) Diversity allows two to win

Optimal Propagation



Choose the best ones, not the worst

Cooperative telephony

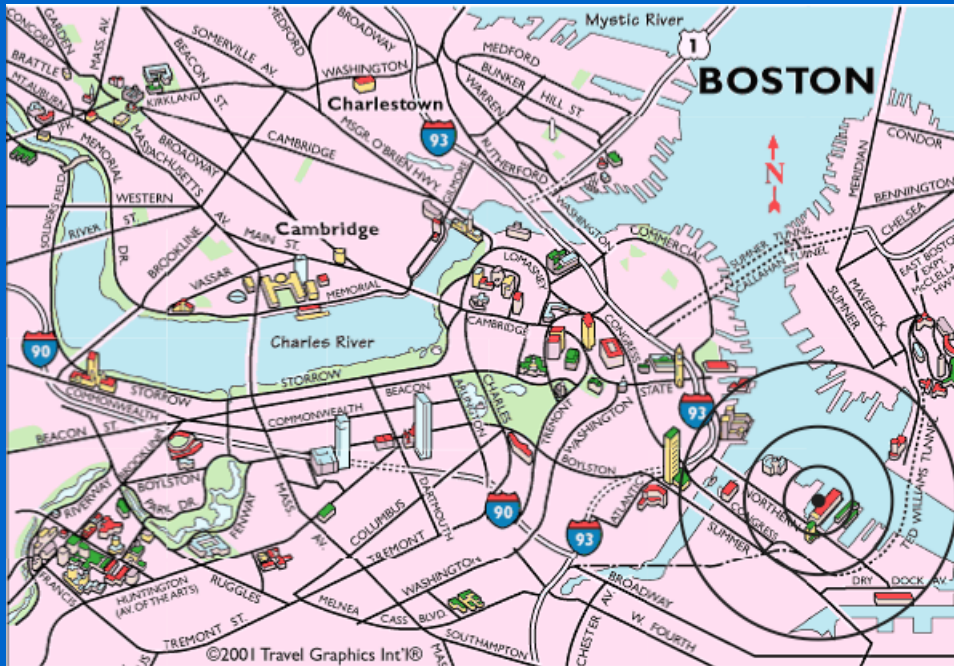
Use my phone for *your* call?

Delays?

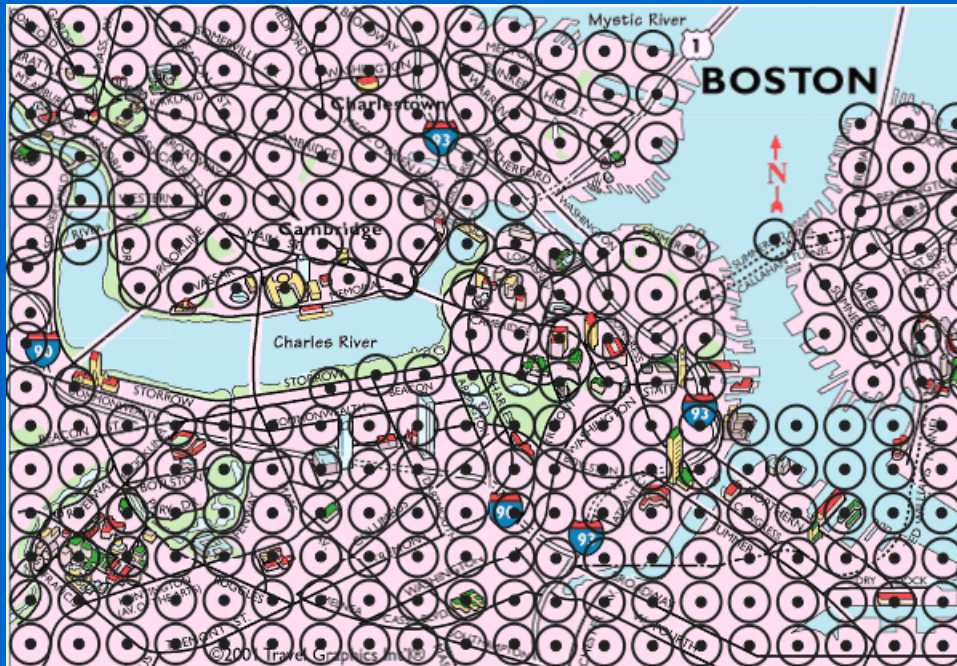
Distance?

Collaboration makes it work

Broadcasting, 2005



Broadcasting, 2015



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