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)
- Spectrum Implications (David Reed)
- Spectrum Policy (Bill Lehr, John Crowcroft

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

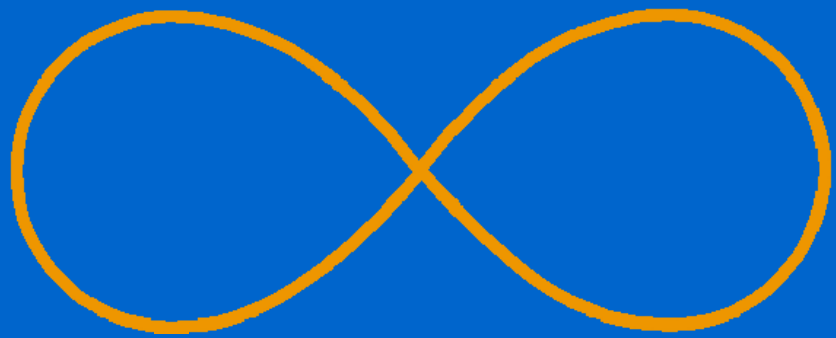
Viral systems are innovative through modularity and distribution of capability -- the intelligence is at the ends

e.g.: Fax machines, Internet

Lippman's helix

Legitimate:

Economic
Centralized
(Scalable)



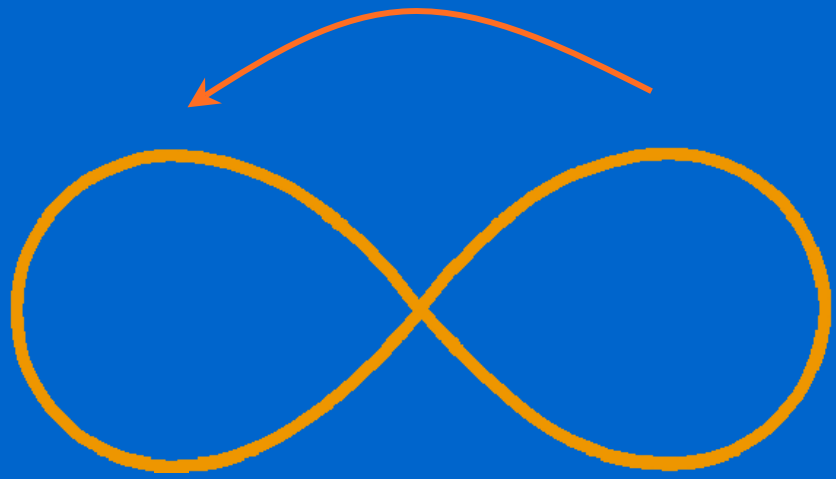
Viral:

Optimized for innovation
Low risk
Agility

After Fine

Going legitimate

When?
Base Techs



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Viral:

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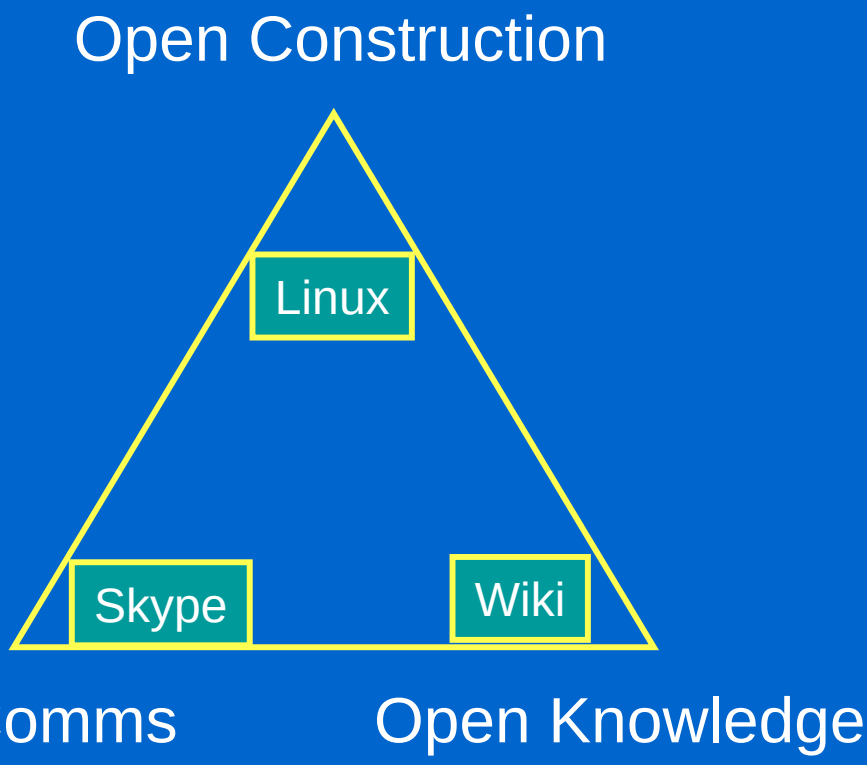
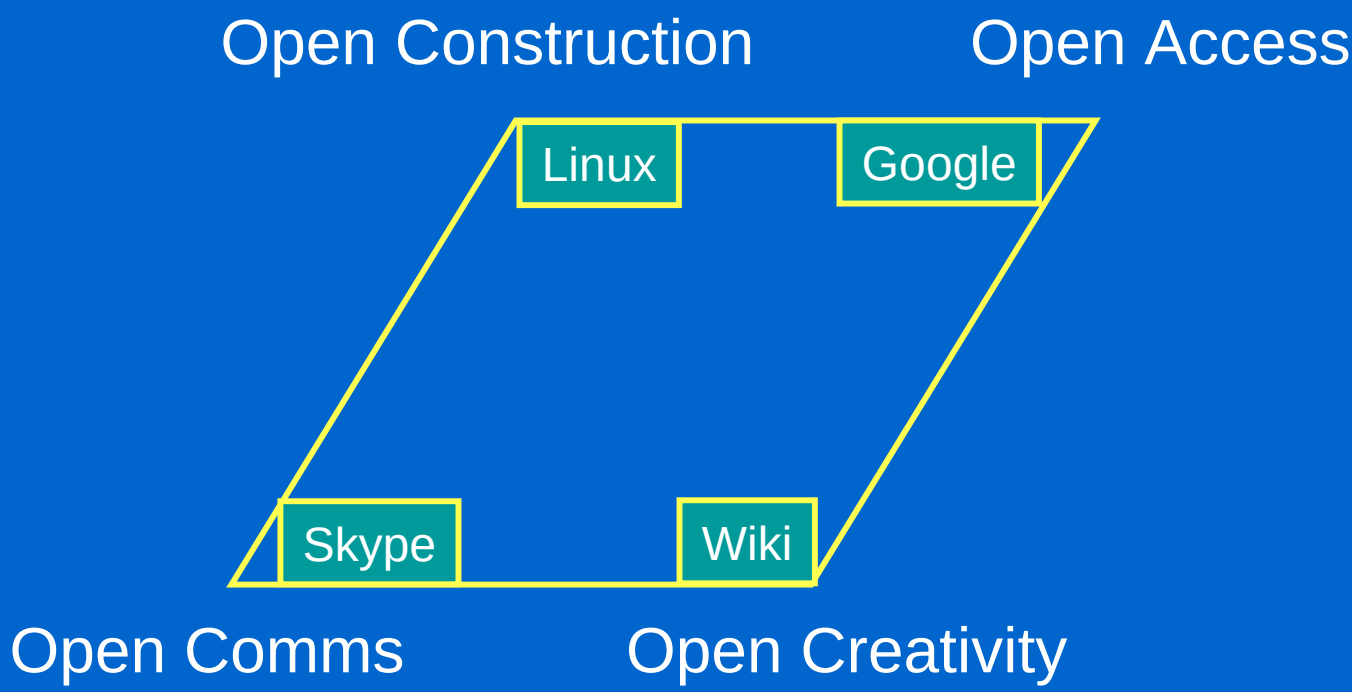
Magic is when tech is in sync with society

Viral organizations



Brazil, today

Viral organization (2)



More than telephone calls

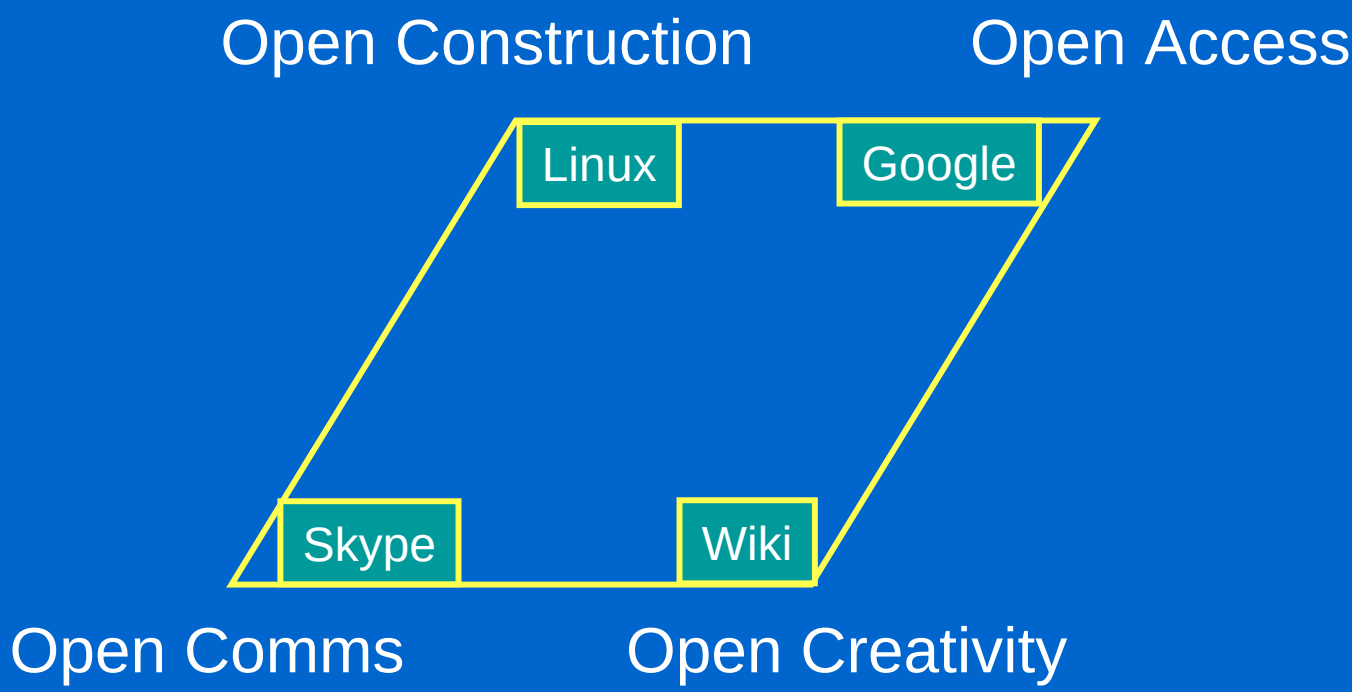
Health

Mobility

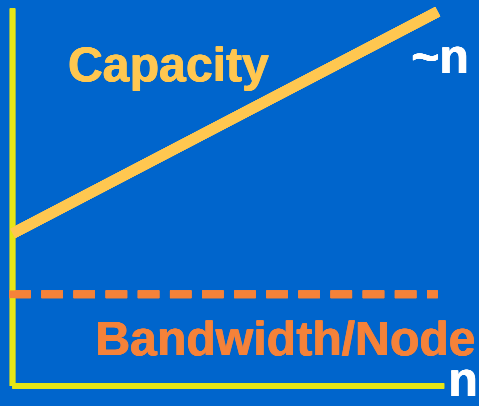
Efficiency

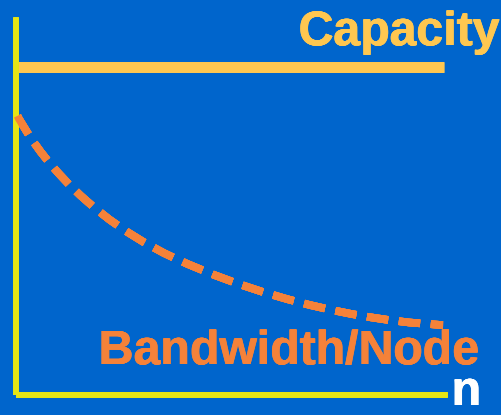
Hundred Dollar Laptop looks at the extremes of personal computing and communications

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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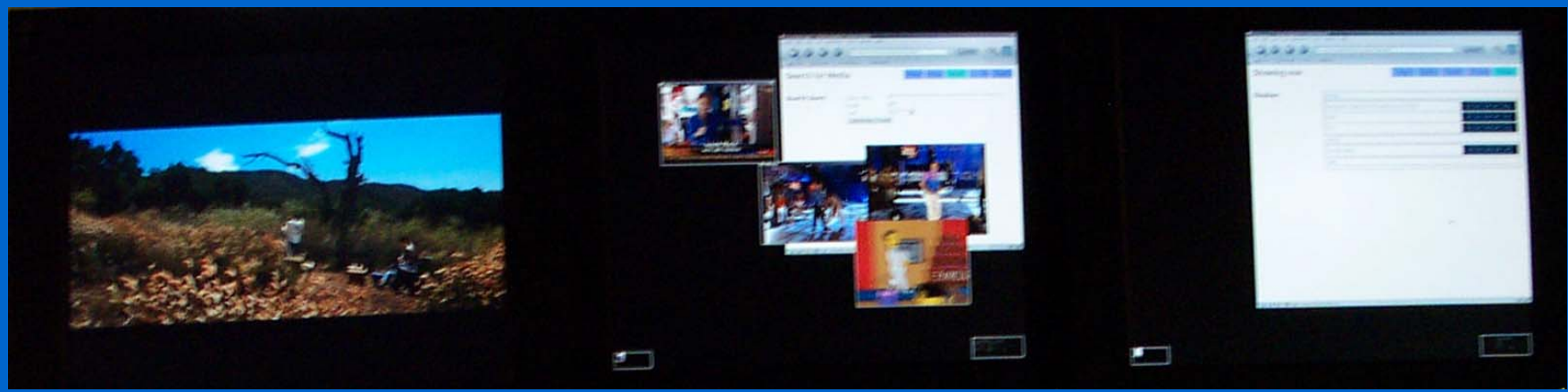
Content Cooperation

2002: Mayhem Protocol

2003: Local Intelligence

2005: Vid Torrent



Lippman, Reed, Bletsas, Christakos, Vyzovitis, Cooley, Li

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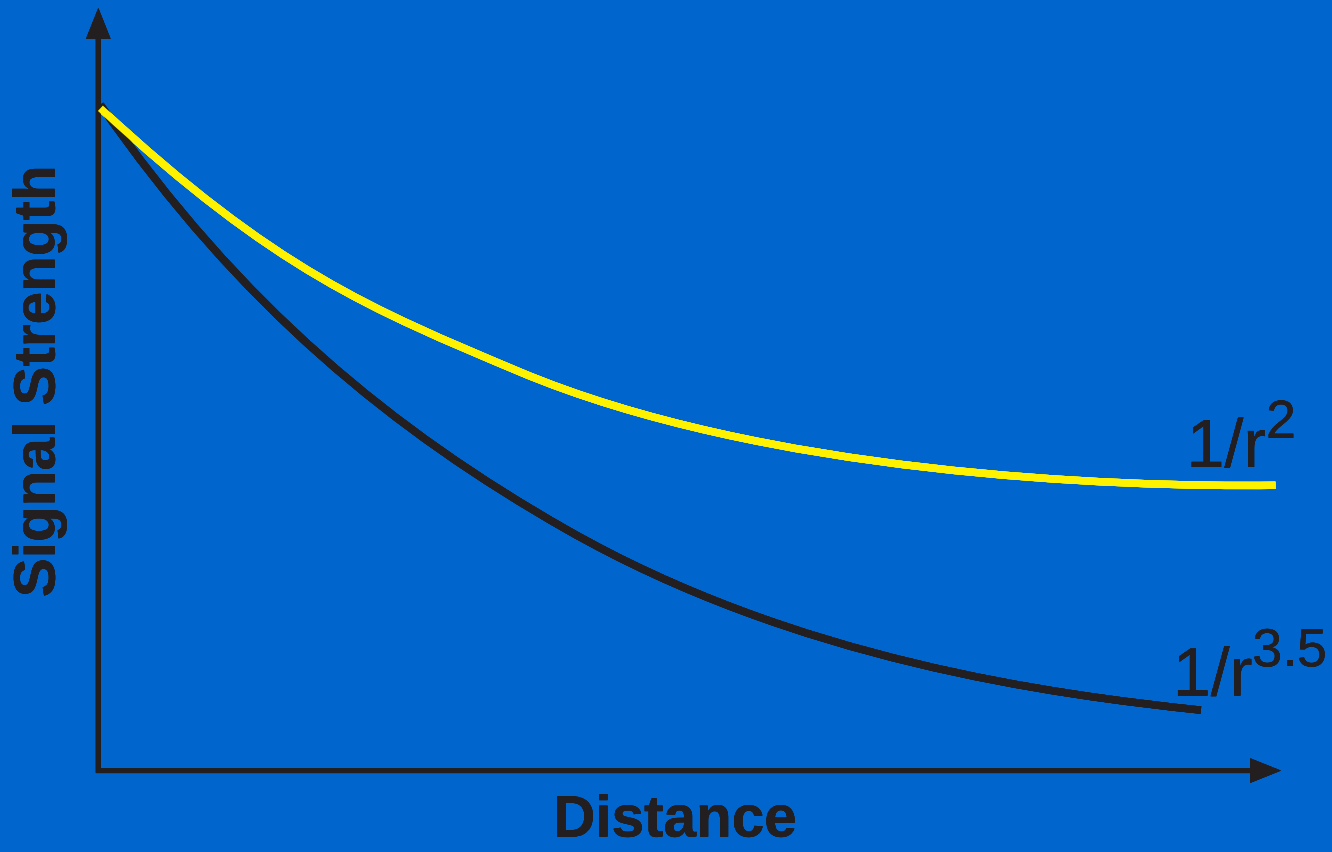
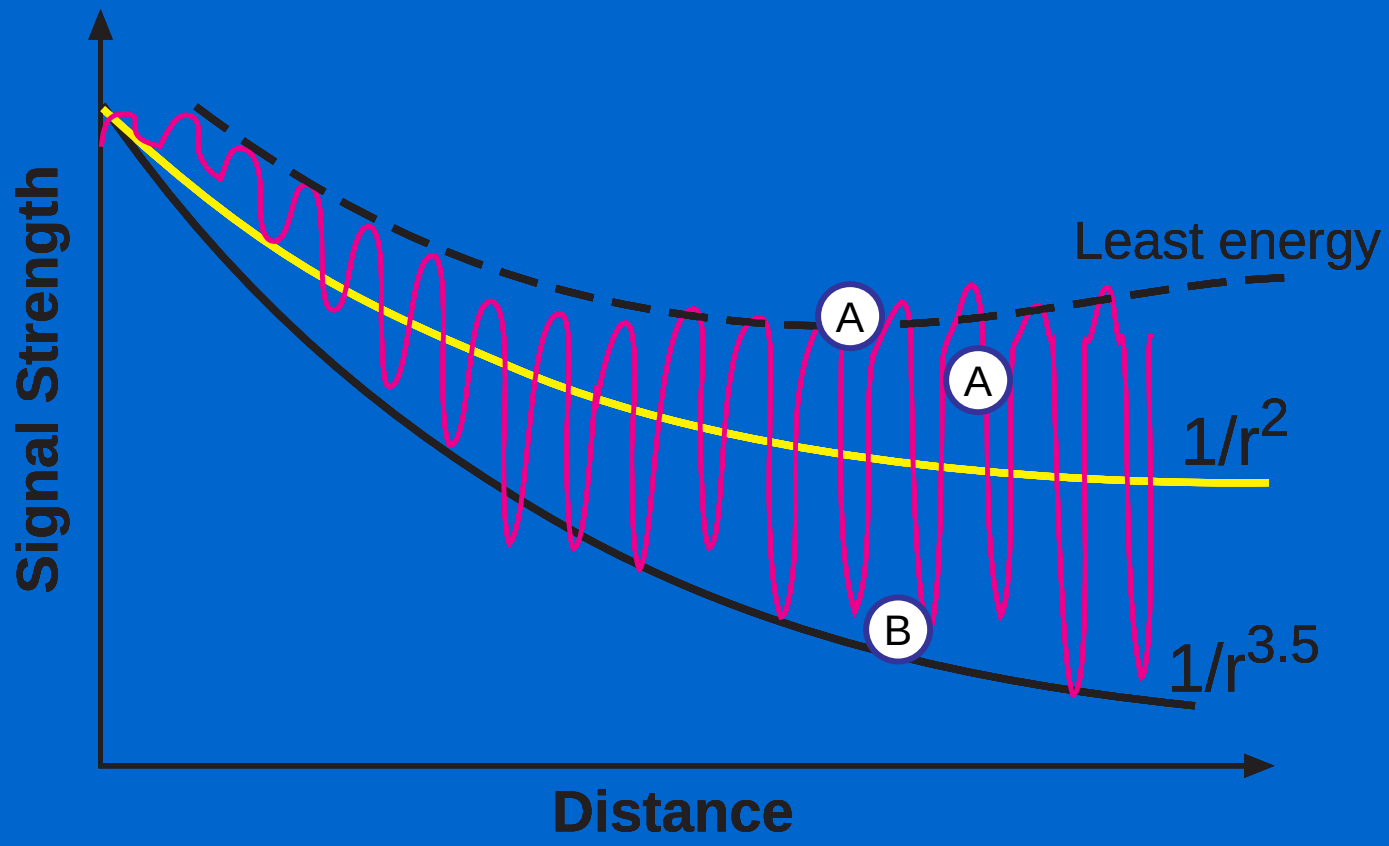
Engineering guidelines (old)



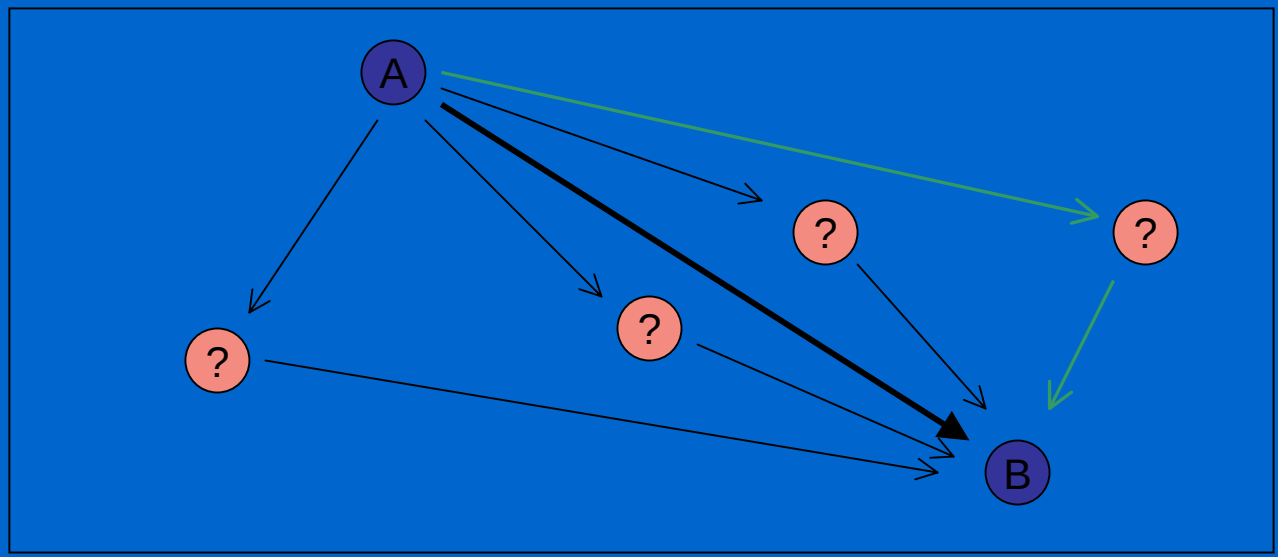
Free space is well known, other cases are not

Radio in the real world



Small movements make large changes

Lesson of 2004: Propagation

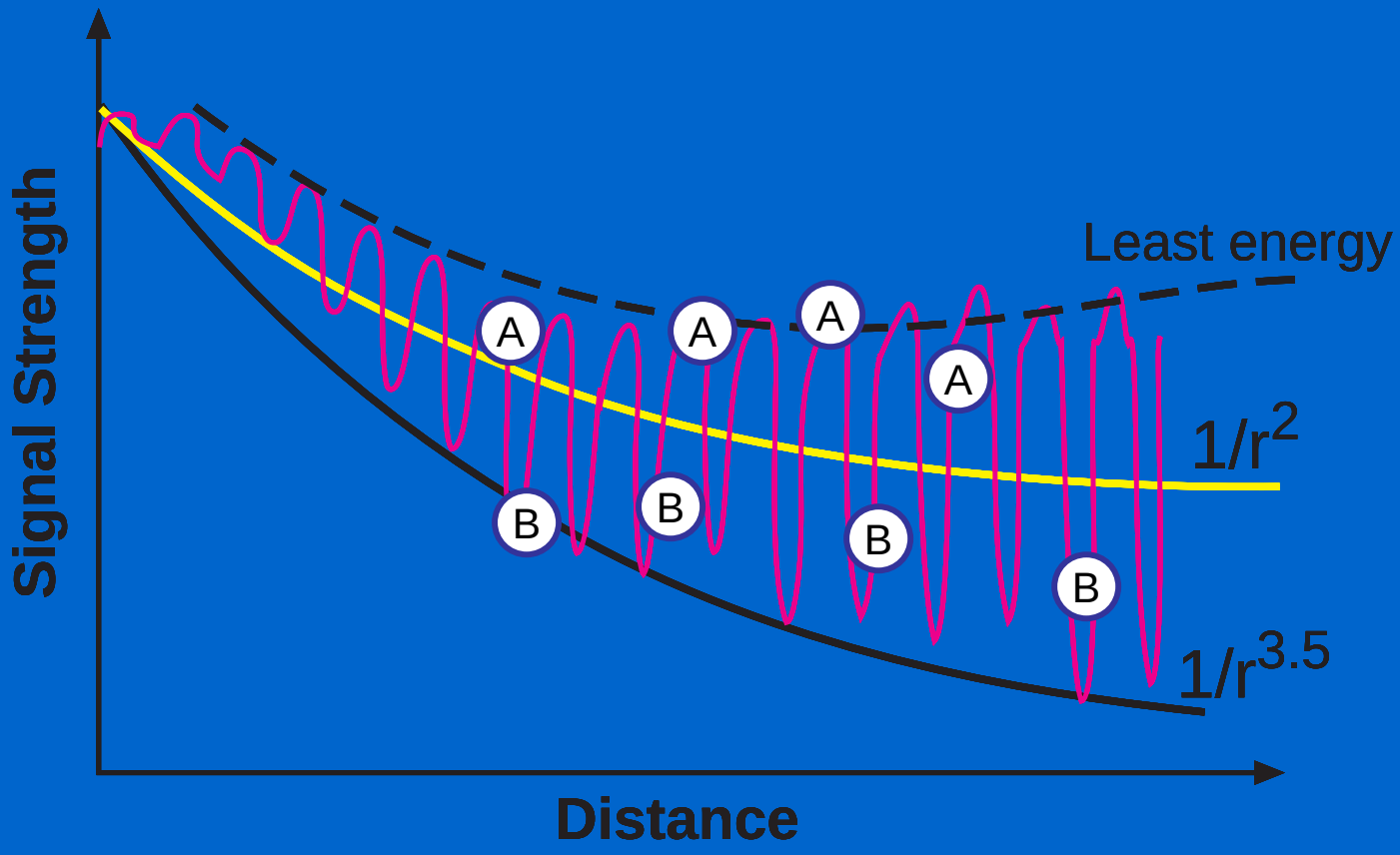


Model: (1) Fill the space with radios (versus power)

(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?*

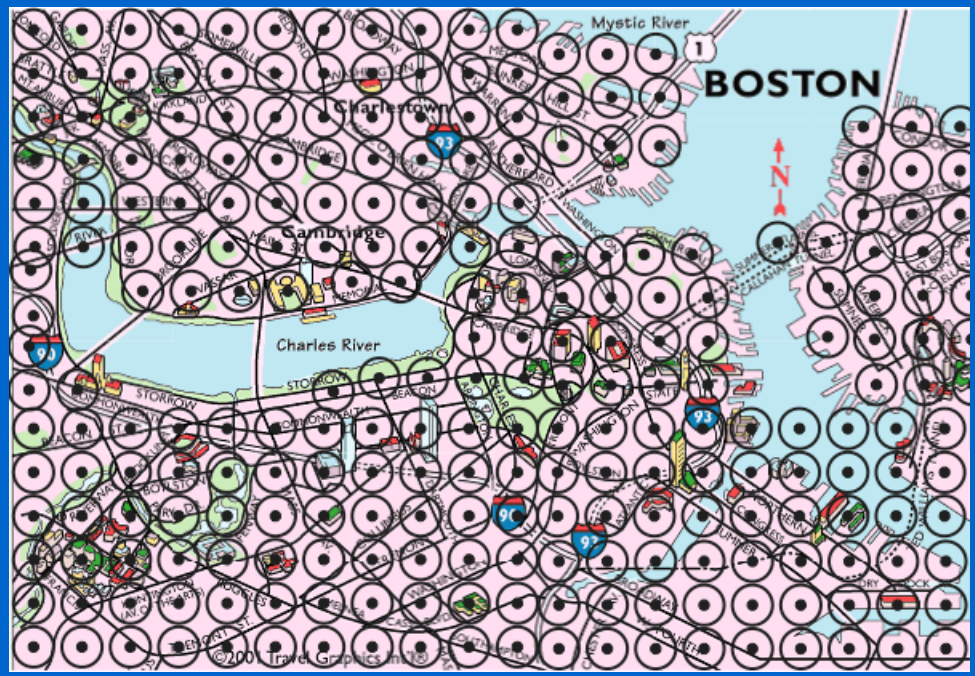
Delays?

Distance?

Collaboration makes it work

Broadcasting, 2005

Broadcasting, 2015



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