

Program in Viral Communications: Executive Summary

Andrew Lippman, August, 2002

The communication industry is in an upheaval equivalent to that caused by the advent of personal computers in the early 1980's. In that earlier revolution, traditional giants who held to mainframe technologies and centralized services were outpaced by newcomers with new ideas about individual ownership, incremental adoption and instant turnover. This will now happen with communications.

The new Viral Communications Program at the MIT Media Laboratory explores the basic technologies of personal communications, the social climate that gives them viral force, and the economics that permits them to thrive. The research program is distributed throughout the Institute and in cooperation with related work at NYU and Harvard. For sponsors, it will reduce the risk associated with innovation and will enable new applications that strike at the heart of existing architectures, business models and regulatory framework.

Primary motivation for the program comes from the recognition that there is a growing network constituency that [1] has no natural allocation authority, [2] needs to be spectrally futureproof, [3] will reinterpret the physical laws of wired and radio communications via modern hardware and [4] demands ultra-rapid system reconfiguration at all time scales and at all layers of architecture. Examples range from free-standing sensors to open 802.11 networks. These emergent communicators can — and will — be renegades: unlicensed, personalized, digital, and embedded. This constituency is and is likely to continue to be the fastest growing segment of the communications market. *These innovations need not be provided by “mainframe” communications companies.*

Technically, we can use cooperative digital radios and wired nodes to make each new member *add* network capability rather than consume it and thereby scale reliably: Each cell phone can be an *ad hoc* tower; each Blackberry can store neighborhood messages; we can build cameras that never run out of film and recorders that consume no tape. This cooperation rewrites the rules of network capacity, interference and power use. Perhaps most important, since the features of the network are implemented in each node rather than in the core, change can be incremental, at the discretion of each user, without requiring historically high capital outlay associated with new communications products. Hence the potential for industrial destabilization.

Vastly reducing the minimum efficient scale for innovation removes the high capital barriers that excluded all but the entrenched few. For the price of a new cell tower, one can now envision a wholly new business. The Viral Communications program is more than basic research, it is a forum for the creation of new opportunities.

Participation entails a three-year commitment and features access to all intellectual property and programs at the Media Laboratory.

