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The Legacy of the Federal Communications Commission's Computer Inquiries

Robert Cannon

Federal Communications Commission

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The Legacy of the Federal Communications Commission's Computer Inquiries

Robert Cannon*

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I. INTRODUCTION

In the 1960s, the Federal Communications Commission (“FCC” or “Commission”) awoke to the reality of powerful computers running communications networks, and communications networks over which humans interacted with really powerful computers. Computer services were a disruptive technology. They were substitute services for traditional incumbent communication services. They were highly competitive, highly innovative, and had low barriers to entry. They showed every promise of playing a vital role in the United States economy. In addition, these computer network services were dependent upon the underlying communications network. Thus, the unregulated computer services were simultaneously substitute services for the traditional regulated communications networks and also dependent upon them.

Meanwhile, the communication network services were using gigantic mainframe computers (“big iron”) to run their networks. During network peaks, mainframe computers were preoccupied with operating the

networks. During off-peaks, these computers had excess capacity. The telephone companies knew a good thing when they saw it and wanted to get into the computer services market, taking advantage, in part, of their inexpensive excess off-peak mainframe capacity. Thus, the telephone companies became simultaneously the supplier of the crucial transmission capacity and a competitor in the computer services market.

The FCC has struggled with the regulatory treatment of computer networks over communications networks ever since. In 1986, the Commission stated:

The regulatory issues spawned by the technical confluence of regulated communications services and unregulated [computer networks] have been among the most important matters this Commission has dealt with over the past 20 years. Indeed, during this period, we have addressed these issues, in one proceeding or another, on a virtually continuous basis, as we have sought to revise and refine our regulatory approach in light of rapidly changing technological and marketplace developments.¹

The history of the FCC and the computer networks, particularly the Internet, is now thirty-five years old. To say that the FCC does not regulate the Internet is to miss the lessons of this history. While it is true that computer networks are unregulated, computer networks were very much a part of the Commission's policy. They were the intended direct beneficiaries of the Computer Inquiries. Safeguards were imposed on common carriers for the benefit of computer networks. In addition, this is not a history of technologically biased regulation, segregating one computer from another based on the technology employed. Rather, this is a market policy, segregating competitive markets from noncompetitive markets. Finally, the conceptual framework follows a Layered Model of Regulation. The separate layers permitted, even created, separate markets (i.e., telephone service, Internet service, application service, and content). These separate markets created separate regulatory policy.

The Computer Inquiries have been referred to by some as "wildly successful."² They were a necessary precondition for the success of the Internet.

1. Amendment of Sections 64.702 of the Comm'n's Rules and Regs. (Third Computer Inquiry), *Report and Order*, 104 F.C.C.2d 958, para. 9, 60 Rad. Reg.2d (P & F) 603 (1986) [hereinafter *Computer III Report and Order*].

2. Jonathan Weinberg, *The Internet and "Telecommunications Services," Universal Service Mechanisms, Access Charges, and Other Flotsam of the Regulatory System*, 16 YALE J. ON REG. 211, 222 (1999) ("That approach was wildly successful in spurring innovation and competition in the enhanced-services marketplace: Government maintained its control of the underlying transport, sold primarily by regulated monopolies, while eschewing any control over the newfangled, competitive 'enhancements.'").

II. COMPUTER I (1966)

A. *The Setting*

1. A Better Mouse Trap

It is the 1960s. The FCC faces a problem. At this time there exists a communications network that offers basic communications service. This communications network is provided by the incumbent monopoly, Ma Bell, also known as AT&T. This network has been traditionally regulated by the FCC. It was built in a regulatory environment as a sanctioned monopoly with ratepayer fees.³

The problem was that someone figured out how to build a better mouse trap. Someone figured out how to use computers with this network. Someone figured out how to enhance the network by adding devices at the ends of the network, layering protocols on top of the network, and achieving data processing using remote terminals. Ultimately these innovations would evolve into computer networks. These enhancements were dependent upon the underlying communications monopoly and came with the marvelous promise of economic expansion, innovation, and competition. These enhancements, however, also threatened to be a substitute for regulated services, and regulated services threatened to be a bottleneck in the way of the growth of these services.

2. Western Union

In the 1960s, the FCC's common carrier authority covered not merely Ma Bell; Western Union also fell under Title II of the Communications Act of 1934. The Western Union telegram service was, in retrospect, an interesting service. The service took an order for a message from a user. The user provided a destination address and content for the message. The message then was inserted into the Western Union system. However, if the message originated in Baltimore for a destination in Los Angeles, it did not go straight through a wire from Baltimore to Los Angeles. Rather, the operator in Baltimore, not knowing the full path of the transmission to Los Angeles, knew instead the next hop in the general direction of Los Angeles, and forwarded the message to that next hop. At the next hop, which might have been Chicago, an operator received the telegram, read only the header

3. Inquiry Concerning the Deployment of Advanced Telecomms. Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecomms. Act of 1996, *Report*, 14 F.C.C.R. 2398, para. 45, 14 Comm. Reg. (P & F) 1292 (1999).

with the address, and then forwarded the message back into the network in the general direction of the destination. In this way, the message worked its way through the network, being stored and then forwarded, hopping from node to node in a best effort, until it reached its final destination and was stored until delivered to the recipient.⁴

In the 1960s, it dawned on users of mainframe computers that they could take advantage of the excess capacity of the mainframes to send messages to each other. Alfred may log onto the mainframe from one remote terminal, and leave a message for Beth. Beth would then log onto the mainframe from another remote terminal, perhaps in another state, and receive the message. Eventually computer message-switching⁵ became a commercial service that did not simply store messages on a mainframe, but transmitted messages through computer networks. Alfred would create a message and hit send. The message would go to the first e-mail server, which would read the address, and then send the message on to the next hop in the network. The next hop would read the address and act accordingly. When the message reached its destination computer, the message was stored until accessed by the recipient, Beth.

These two things look very similar to each other. However, one was regulated; the other was not. One was expensive; the other one was cheap, and avoided regulatory fees. One is a substitute service for the other.⁶

There are two things to be taken away from this. First, message-switching was dependent upon a regulated underlying telephone monopoly for transmission. Second, unregulated message-switching was a substitute service for the regulated telegram services of Western Union.⁷ What exactly to do with message switching was one of the significant drivers of the *Computer I* inquiry.⁸

4. Delbert D. Smith, *The Interdependence of Computer and Communications Services and Facilities: A Question of Federal Regulation*, 117 U. PA. L. REV. 829 (1969).

5. See *Computer and Comm. Indus. Ass'n v. FCC*, 693 F.2d 198, 203 n.6 (D.C. Cir. 1982) (“‘Message-switching’ was defined as ‘[t]he computer-controlled transmission of messages, between two or more points, via communications facilities, wherein the content of the message remains unaltered.’”); Reg. and Policy Problems Presented by the Interdependence of Computer and Comm. Servs., *Tentative Decision*, 28 F.C.C.2d 291, para. 15, 18 Rad. Reg.2d (P & F) 1713 (1970) [hereinafter *Computer I Tentative Decision*].

6. The Author wishes to acknowledge Prof. Dale Hatfield for this point.

7. See Smith, *supra* note 4, at 831, 836 (recounting historical context of *Computer I* actions and issues presented).

8. *Id.* at 852.

3. Big Iron and New Networks

This was a moment of major expansion of the American economy. Big iron mainframe computing had taken hold and was becoming big business. Mainframe computing was also evolving with the advent of time sharing and remote terminal access.⁹ The role of IBM, computer manufacturers, and data processing services in the economy had grown and promised continued growth.¹⁰ There were in-house computer services, computer service bureaus, and specialized computer services such as stock quotation services.¹¹ Computers were being used to facilitate President Kennedy's space race, advance the Cold War, run communications networks that replaced human operators, and re-create the way business was conducted.¹² The Internet would not be born until the end of the 1960s.¹³ The United States government responded to the 1950s Soviet launch of Sputnik with, among other things, the establishment of the Advanced Research Projects Agency ("ARPA"). ARPA's computer research program, headed by individuals such as J.C.R. Licklider and Larry Roberts, led a team of researchers to develop the ARPANet. On October 25, 1969, ARPANet went online, transmitting its first message between computers at the University of California at Los Angeles and the Stanford Research Institute. Originally, the government-run ARPANet used the Network Control Protocol; it did not migrate to the Internet Protocol ("IP") for 14 years.¹⁴

9. Reg. and Policy Problems Presented by the Interdependence of Computer and Comm. Servs., *Notice of Inquiry*, 7 F.C.C.2d 11, para. 16, 8 Rad. Reg.2d (P & F) 1567 (1966) [hereinafter *Computer I Notice of Inquiry*].

10. Pursuant to the 1956 Consent Decree, IBM was prohibited from entering the computer service bureau market and could only act as a supplier of equipment. Smith, *supra* note 4, at 834.

11. *Computer I Notice of Inquiry*, *supra* note 9, paras. 3-9; Smith, *supra* note 4, at 831, 836 (recounting the historical context of *Computer I* actions and issues presented).

12. Triumph of the Nerds: A History of the Computer: Electronics (1996), at <http://www.pbs.org/nerds/timeline/elec.html> (last visited Nov. 17, 2002); Computer History Museum, Timeline of Computer History, at <http://www.computerhistory.org/timeline/index.page> (last visited Nov. 17, 2002).

13. This paper focuses on the Internet as a primary example of the FCC's Computer Inquiry policy. The Internet is but one example, perhaps a paradigm, among a multitude of what would come to be known as enhanced services.

14. Robert X. Cringely, *PBS Nerds 2.0.1 Timeline* (1998), at <http://www.pbs.org/opb/nerds2.0.1/timeline/>; Richard T Griffiths, *The Origins and Growth of the Internet and the World Wide Web* (Oct. 2001), at <http://www.let.leidenuniv.nl/history/ivh/chap1.htm>; Computer History Museum, *Internet History and Microprocessor Timeline 1962-1992*, at http://computerhistory.org/exhibits/internet_history (last visited Nov. 17, 2002).

B. *The Issue*

In the 1960s, the FCC faced a problem of something the Commission referred to as “convergence.”¹⁵ There were computers that facilitated the operation of the communications network and there were computers with which humans interacted.¹⁶ What should the Commission make of these computers? How should they be treated and how do they fall within the regulatory scheme? What type of jurisdiction did the FCC have over these computers and should data processing services be regulated under Title II of the Communications Act of 1934? Should the FCC be concerned that some of those regulated communications companies were wandering off and entering into the unregulated data processing markets, at times using the excess capacity of their communications network computers to do data processing? Were the communication networks keeping up with the needs and the demands of the data processing networks?

Thus, the FCC, in order to resolve these problems, launched in 1966 what came to be known as the *Computer I* inquiry.¹⁷ The task before the Commission could be boiled down to two issues:

- (a) [t]he nature and extent of the regulatory jurisdiction to be applied to data processing services; and
- (b) [w]hether, under what circumstances, and subject to what conditions or safeguards, common carriers should be permitted to engage in data processing.¹⁸

C. *The Policy*

1. Classification

The year 1970 saw the FCC’s first attempt to divide the world. The FCC concluded that the appropriate division would be between those computers that ran the communications network and those computers at the ends of the telephone lines with which people interacted. The division was technological, focused on computer processing, attempting to divine the difference between circuit- or message-switching and data processing.¹⁹

15. *Computer I Notice of Inquiry*, *supra* note 9, para. 13; *see also* Second Computer Inquiry, *Final Decision*, 77 F.C.C.2d 384, para. 19, 47 Rad. Reg.2d (P & F) 669 (1980) [hereinafter *Computer II Final Decision*] (“The *First Computer Inquiry* was a vehicle for identification and better understanding of problems spawned by the confluence of computer and communications technologies taking place at that time.”).

16. *Computer I Notice of Inquiry*, *supra* note 9, paras. 10-16 (discussing the migration of common carriers to the use of computers to run networks).

17. *See generally id.*

18. *Computer I Tentative Decision*, *supra* note 5, para. 14.

19. *Computer II Final Decision*, *supra* note 15, para. 17.

The Commission attempted to divide the world between “pure communications” and “pure data processing.”²⁰

Pure communications exist where the content of the message is transmitted over the network transparently with no change in content or form of the message.²¹ Pure data processing is the processing that takes place at the end of the telephone line. It is:

[t]he use of a computer for the processing of information as distinguished from circuit or message-switching. ‘Processing’ involves the use of the computer for operations which include, *inter alia*, the functions of storing, retrieving, sorting, merging and calculating data, according to programmed instructions.²²

The problem is that there is computer processing in both communications and data communications. What was the FCC to do with things that looked like they were a little bit of each? The Commission was not too sure, so it created a third category known as *hybrids*.²³ This was the gray area and the FCC declared that it would resolve the classification of these gray services on an ad hoc, case-by-case basis.²⁴ If it was more communications than not, then it was communications; if it was more data processing than not, then it was data processing.²⁵ This gray area was the exception that subsumed the rule and quickly became the undoing of *Computer I*.

2. Regulation

These two categories had very different characteristics that led to different policy results. This pivotal theme goes throughout the Computer Inquiries. The Commission made policy decisions about these different computers based not upon the technology, but upon the markets within which the technology existed.

20. Computer and Comm. Indus. Ass’n v. FCC, 693 F.2d 198, 203 (D.C. Cir. 1982).

21. *Id.* at 203 n.6; *Computer I Tentative Decision*, *supra* note 5, para. 15.

22. *Computer I Tentative Decision*, *supra* note 5, para. 15.

23. *Id.* (“Hybrid Service—an offering of service which combines Remote Access data processing and message-switching to form a single integrated service.”).

24. Reg. and Policy Problems presented by the Interdependence of Computer and Comm. Servs., *Final Decision and Order*, 28 F.C.C.2d 267, paras. 27, 31-38, 21 Rad. Reg.2d (P & F) 1591 (1971) [hereinafter *Computer I Final Decision*]; *Computer I Tentative Decision*, *supra* note 5, paras. 39-45.

25. Amendment of Section 64.702 of the Comm’n’s Rules and Regs. (Second Computer Inquiry), *Tentative Decision and Further Notice of Inquiry and Rulemaking*, 72 F.C.C.2d 358, paras. 6-7, 17, 45 Rad. Reg.2d (P & F) 1485 (1979) [hereinafter *Computer II Tentative Decision*]; *Computer II Final Decision*, *supra* note 15, paras. 13-14; Amendment of Section 64.702 of the Comm’n’s Rules and Regs., *Notice of Inquiry and Proposed Rulemaking*, 61 F.C.C.2d 103, paras. 13-14 (1976) [hereinafter *Computer II Notice of Inquiry*].

The pure data processing market was viewed as an innovative, competitive market with low barriers to entry and little chance of monopolization. Viewing this market, the FCC concluded that there was no demonstrated need for regulation or safeguards.²⁶ The FCC became quite apologetic as *Computer I* went on, clarifying that it never had any intention whatsoever at any time of regulating data processing.²⁷

The pure communications market, on the other hand, was provisioned by an incumbent monopoly. This monopoly almost always was AT&T but there were a few other players such as GTE and a large handful of small, mainly rural, incumbent carriers. In any given market, these players exercised control through their regulated monopoly. Thus, the FCC articulated four concerns about the incumbent telephone companies:

- (a) That the sale of data processing services by carriers should not adversely affect the provision of efficient and economic common carrier services;
- (b) That the costs related to the furnishing of such data processing services should not be passed on, directly or indirectly, to the users of common carrier services;
- (c) That revenues derived from common carrier services should not be used to subsidize any data processing services; and
- (d) That the furnishing of such data processing services by carriers should not inhibit [the competitive computer market].²⁸

The telephone companies were acquiring large computers that helped run their networks during peak performance times. These computers were

26. *Computer I Tentative Decision*, *supra* note 5, paras. 19-23:

Applying these standards to the record before us we conclude that the offering of data processing services is essentially competitive and that, except to the limited extent hereinafter set forth, there is no public interest requirement for regulation by government of such activities. Thus, there is ample evidence that data processing services of all kinds are becoming available in larger volume and that there are no natural or economic barriers to free entry into the market for these services. The number of data processing bureaus, time sharing systems, and specialized information services is steadily increasing and there are no indications that any of these markets are threatened with monopolization.

Id. para. 20. See also *Computer II Final Decision*, *supra* note 15, para. 127 (reviewing *Computer I* history); *Computer II Tentative Decision*, *supra* note 25, paras. 16-17 (reviewing *Computer I* history).

27. The Commission stated:

It should be made clear that we are not seeking to regulate data processing as such, nor are we attempting to regulate the substance of any carrier's offerings of data processing. Rather, we are limiting regulation to requirements respecting the framework in which a carrier may publicly offer particular non-regulated services, the nature and characteristics of which require separation before predictable abuses are given opportunity to arise.

Computer I Final Decision, *supra* note 24, para. 30.

28. *Id.* para. 9. See also *Computer II Tentative Decision*, *supra* note 25, para. 124 (reviewing history of maximum separation).

paid for by ratepayers. During the off-peak hours, these computers would have excess capacity that the telephone companies could use to enter the data processing market.²⁹ Since these services were paid for with telephone revenue, this gave the telephone companies the ability to enter the data processing market at significantly reduced rates.³⁰ Having entered the market, the carriers would have the incentive and the opportunity for cross-subsidization and other unfair trade practices.³¹

It was not the design of the FCC to bluntly bar carriers from the provision of data processing services;³² rather the Commission recognized certain benefits if safeguards could be designed to permit carriers to enter into the market.³³ Also, the Commission at this time was concerned that the telephone companies were sufficiently meeting the needs of data processing and computer services.³⁴ The Computer Inquiries policy had as its explicit goal the promotion of economic growth and innovation in the

29. *Computer I Final Decision*, *supra* note 24, para. 7; *Computer I Notice of Inquiry*, *supra* note 9, para. 10-16.

30. *See also Computer II Notice of Inquiry*, *supra* note 25, para. 3:

First, a major regulatory concern of the Commission was the appropriateness of a carrier utilizing part of its communications switching plant to offer a data processing service. Further, there was the issue of whether communication common carriers should be permitted to sell data processing services and, if so, what safeguards should be imposed to insure that the carriers would not engage in anti-competitive or discriminatory practices. There was also concern as to the extent to which data processing organizations should be permitted to sell communications as part of a data processing package not subject to regulation.

Id.

31. *Computer I Final Decision*, *supra* note 24, paras. 21-22; *see also Computer II Notice of Inquiry*, *supra* note 25, para. 5 (“[W]e were concerned about the possibility that common carriers might favor their own data processing activities by discriminatory services, cross subsidization, improper pricing of common carrier services, and related anticompetitive practices and activities which could result in burdening or impairing the carrier’s provision of its other regulated services.”); *Computer I Tentative Decision*, *supra* note 5, para. 25.

32. *See Computer I Final Decision*, *supra* note 24, para. 11 (discussing and rejecting parties’ views that there should be an outright ban on carrier provision of data processing services).

33. *Computer I Tentative Decision*, *supra* note 5, paras. 30-33.

34. *Computer I Notice of Inquiry*, *supra* note 9, para. 21:

This, then, is another area of concern. Are the service offerings of the common carriers, as well as their tariffs and practices, keeping pace with the quickened developments in digital technology? Does a gap exist between computer industry needs and requirements, on the one side, and communications technology and tariff rates and practices on the other?

Id. *See also Computer I Tentative Decision*, *supra* note 5, paras. 6-11 (resolving the issue of whether common carrier offerings are meeting the needs of the computer industry); *Computer II Final Decision*, *supra* note 15, para. 14; *Computer II Tentative Decision*, *supra* note 25, para. 2.

computer services market.³⁵ The Commission recognized the dependency of the computer networks on the underlying communications facility:

There is virtually unanimous agreement by all who have commented in response to our Inquiry, as well as by all those who have contributed to the rapidly expanding professional literature in the field, that the data processing industry has become a major force in the American economy, and that its importance to the economy will increase in both absolute and relative terms in the years ahead. There is similar agreement that there is a close and intimate relationship between data processing and communications services and that this interdependence will continue to increase. In fact, it is clear that data processing cannot survive, much less develop further, except through reliance upon and use of communication facilities and services.³⁶

The communications facility was a crucial resource upon which they depended, supplied by a single provider who also had the potential to be a competitor.

Telephone companies had both the ability and the incentive to act in an anticompetitive manner.³⁷ They sat in an unusual place in the market of being both supplier and competitor to the data processing services.³⁸ The Commission expressed misgivings about whether permitting telephone companies to enter the data processing market was prudent, questioning

35. *Computer II Tentative Decision*, *supra* note 25, para. 59.

36. *Computer I Final Decision*, *supra* note 24, para. 7; *see also Computer I Notice of Inquiry*, *supra* note 9, para. 1 (“Effective use of the computer is, therefore, becoming increasingly dependent upon communication common carrier facilities and services by which the computers and the user are given instantaneous access to each other.”).

37. In 1987, the Federal District Court for Washington, D.C. stated:

That the ability for abuse exists as does the incentive, of that there can also be no doubt. As stated above, information services are fragile, and because of their fragility, time-sensitivity, and their negative reactions to even small degradations in transmission quality and speed, they are most easily subject to destruction by those who control their transmission. Among the more obvious means of anticompetitive action in this regard are increases in the rates for those switched and private line services upon which Regional Company competitors depend while lower rates are maintained for Regional Company network services; manipulation of the quality of access lines; impairment of the speed, quality, and efficiency of dedicated private lines used by competitors; development of new information services to take advantage of planned, but not yet publicly known, changes in the underlying network; and use for Regional Company benefit of the knowledge of the design, nature, geographic coverage, and traffic patterns of competitive information service providers.

United States v. W. Elec. Co., 673 F. Supp. 525, 566 (D.D.C. 1987).

38. *Computer I Notice of Inquiry*, *supra* note 9, para. 15 (“As a consequence, common carriers, in offering these services, are, or will be, in many instances, competitive with services sold by computer manufacturers and service bureau firms. At the same time, such firms will be dependent upon common carriers for reasonably priced communication facilities and services.”).

whether telephone companies should be permitted into this market at all.³⁹ If they were so permitted, then the question was on what terms and with what safeguards?⁴⁰

3. Safeguard: Maximum Separation

In response to the concerns related to the communications facility, the Commission devised its "Maximum Separation" safeguards.⁴¹ Maximum Separation meant that regulated communications carriers could enter the unregulated data processing market, but only through a fully separate subsidiary.⁴² The FCC required that a carrier establish a separate data processing corporation, have separate accounting books, have separate officers, have separate personnel, and have separate equipment and facilities.⁴³ The carrier was also prohibited from promoting the data processing services offered by the separate subsidiary.⁴⁴ The carrier could not use its network computers for non-network purposes; the carrier could not use the excess capacity of the network computers during off-peak times to provision data processing services.⁴⁵ Finally, the affiliated subsidiary

39. *Computer II Tentative Decision*, *supra* note 25, para. 15.

40. *Id.* para. 3.

41. *Computer I Final Decision*, *supra* note 24, para. 10; *Computer I Tentative Decision*, *supra* note 5, paras. 34-35:

Because of the increasing involvement of interstate communications facilities and services in the provision of data transmission, the need for such separation is apparent and urgent. This need exists whether or not at the present time the carrier is engaged in the sale of local or remote access data processing. In either instance, there is a potential for abuse in the form of a commingling of costs associated with the rendition of communication and data processing services, which can give rise to the above-discussed problems of cross-subsidization and other unfair competitive practices in the pricing of regulated and nonregulated services. Also, such commingling of operations and related costs will unduly complicate the task of effective regulation of the communication rates and services of common carriers. It will tend to obscure, if not defeat, the ready identification and allocation for accounting and ratemaking purposes of the costs associated with each activity.

Id. para. 35. See *Computer II Final Decision*, *supra* note 15, para. 18; *Computer II Tentative Decision*, *supra* note 25, paras. 4, 123.

42. See *Computer I Tentative Decision*, *supra* note 5, paras. 36-38.

43. See *id.* para. 36.

44. *Computer I Final Decision*, *supra* note 24, paras. 18, 21: "[W]e have decided to modify our rules to prohibit a data affiliate from using the name of its related common carrier in its promotions and, further, to prohibit such affiliate from using, in its corporate name, any words or symbols contained in the name of its affiliated carrier." *Id.* para. 18.

45. *Id.* paras. 13-15, 24. Carriers could use their own computers to meet their own data processing needs and the needs of independent telephone companies, so long as those needs were incidental to the provision of communications services. *Id.* para. 40. The carrier was otherwise, however, prohibited from acquiring the services of its data processing affiliate. *Id.* para. 20.

was not itself permitted to own transmission services but had to acquire all such services on a tariff basis.⁴⁶

There is a bit of a curiosity however about to whom this obligation would apply. Maximum Separation applied only to those carriers with annual operating revenues exceeding \$1,000,000.⁴⁷ It appears that perhaps the only carriers that surpassed the threshold might be AT&T and GTE. AT&T, however, had other problems. The U.S. Department of Justice initiated an antitrust proceeding against AT&T in 1956, the settlement of which prohibited AT&T from offering unregulated services.⁴⁸ By declaring data processing to be unregulated, the FCC may also have been declaring that AT&T was barred from providing such services.⁴⁹

46. See *Computer II Final Decision*, *supra* note 15, para. 229.

47. *Computer I Final Decision*, *supra* note 24, para. 23. See *Computer I Tentative Decision*, *supra* note 5, para. 36.

48. *United States v. AT&T*, 552 F. Supp. 131 (D.D.C. 1982), *aff'd sub nom.* *Maryland v. United States*, 460 U.S. 1001 (1983), *vacated sub nom.* *United States v. W. Elec. Co.*, 2 Comm. Reg. (P & F) 1388 (D.D.C. 1996). See *Accounting Safeguards Under the Telecomms. Act of 1996, Report and Order*, 11 F.C.C.R. 17539, para. 3 n.5, 5 Comm. Reg. (P & F) 861 (1996) [hereinafter *Accounting Safeguards*].

The Modified Final Judgment ("MFJ") originally prohibited the BOCs from providing information services, providing interLATA services, or manufacturing and selling telecommunications equipment or manufacturing customer premises equipment. The theory behind this prohibition in the MFJ was that the BOCs could leverage their market power in the local market to impede competition in the interLATA services, manufacturing, and information services markets. The information services restriction was modified in 1987 to allow BOCs to provide voice messaging services and to transmit information services generated by others.

Id. (internal citations omitted); *Computer I Tentative Decision*, *supra* note 5, para. 24 (stating AT&T "cannot furnish data processing services"). Cf. *Computer II Final Decision*, *supra* note 15, paras. 277-81 (suggesting that it was not clear what AT&T was and was not permitted to do with regard to enhanced services and customer-premises equipment ("CPE")); *Computer II Tentative Decision*, *supra* note 25, paras. 135-48 (noting that AT&T was foreclosed from offering data processing services under *Computer I*, but further concluding that AT&T would be permitted into the CPE and enhanced services market).

49. See Ann E. Rendahl, *California v. FCC: A Victory for the States*, 13 HASTINGS COMM. & ENT. L.J. 233, 238-39 (1991):

The FCC determined that it was only necessary to apply this maximum separation policy to common carriers earning over one million dollars a year, but only the American Telephone & Telegraph Co. (AT&T) fell into this category. However, such line drawing was irrelevant since AT&T and the Bell Operating Companies (BOCs) were already prohibited from providing competitive, non-common carrier services under a 1956 consent decree

Id. at 239. See also Amendment of Sections 64.702 of the Comm'n's Rules and Regs. (Third Computer Inquiry), *Report and Order*, 104 F.C.C.2d 958, paras. 24-26, 60 Rad. Reg.2d (P & F) 603 (1986) [hereinafter *Computer III Report and Order*] (describing debate concerning whether AT&T would be permitted into the "information services" market).

D. *Legacy of Computer I*

What is the legacy of *Computer I*? The first principles laid down in *Computer I* are consistently followed throughout the entire proceeding. How these first principles are applied and the outcome that is produced may be different, but the Computer Inquiries are consistently concerned about markets. The data processing market is highly competitive and innovative and demonstrates no need for regulation. The data processing market, however, is dependent upon the communications market. The communications companies are both a bottleneck supplier of services and a competitor in the data processing market. Therefore, strict safeguards were put into place in order to restrain the market power of the communications company and for the benefit of the data processing market. These are border regulations between markets where the divisions between the markets can easily be discerned and maintained. These safeguards create an open communications platform available to all users on a nondiscriminatory basis.

There is another important point. Contrary to popular mischaracterization, this is not a history of regulatory restraint. This is not a history of the FCC “not regulating the Internet.”⁵⁰ Rather, this is a history of the FCC taking affirmative and aggressive regulation of communications networks, specifically for the benefit of the computer networks. The computer networks were clearly the designated beneficiaries of the safeguards.

Finally, the problems addressed by the Commission in the 1960s are parallel to the issues today. It was called “convergence” back then just like today. The “new service” was a substitute for the old service. The new service was unregulated where the old service was entrenched and

50. Compare JASON OXMAN, THE FCC AND THE UNREGULATION OF THE INTERNET (Office of Plans and Policy, Federal Communications Commission, Working Paper No. 31, 1999) available at http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp31.pdf (reviewing FCC precedent from the perspective of how the FCC elected not to regulate information services). See also Press Release, Federal Communications Commission, Internet Prospers With “Hands-Off Unregulation;” FCC Paper Rejects Need For Precipitous Action (July 19, 1999) available at http://www.fcc.gov/Bureaus/OPP/News_Releases/1999/nrop9004.html (stating “the paper examines the FCC’s thirty-year history of not regulating the data services market, and how that tradition of ‘unregulation’ was a crucial factor in the successful growth of the Internet”); FCC, CONNECTING THE GLOBE, A REGULATOR’S GUIDE TO BUILDING A GLOBAL INFORMATION COMMUNITY IX-3 (1999), available at <http://www.fcc.gov/connectglobe/> (stating “[t]he Internet has evolved at an unprecedented pace, in large part due to the absence of government regulation”); FCC Chairman William E. Kennard, Address before the Federal Communications Bar Northern California Chapter, San Francisco, CA, “The Unregulation of the Internet: Laying a Competitive Course for the Future” (July 20, 1999) (transcription available at <http://www.fcc.gov/Speeches/Kennard/spwek924.html>).

regulated. The new service was dependent upon the underlying old service. The old service sought to enter the market of the new service. The old service market was highly consolidated (well, OK, it was a monopoly then). These are similar to today's issues.

III. COMPUTER II (1976)

A. *The Setting*

The ink had not dried on the *Computer I* before it had become clear that it had problems. The FCC was inundated with applications concerning hybrid services and forced to make a case-by-case analysis of where these services might fall.⁵¹ Computer processing was involved in both "pure communications" and "data processing."⁵²

In the meantime, a curious thing had happened. The relatively dumb terminals that had been used to communicate with the mainframe computers had become smart. The cost of computer processing units ("CPUs") was dropping dramatically. Computer chips were showing up in places other than IBM big iron. Suddenly, microcomputers made their appearance, there was intelligence at both ends of the line, and distributed computing had been born.⁵³ The Commission took note of the introduction of packet-switched networks such as Telenet.⁵⁴ AT&T was building customer premise equipment—telephones—with which one could enter

51. See *Computer II Tentative Decision*, *supra* note 25, para. 86 ("We recognize the inadequacy of the hybrid service definitions in the existing rule."); *Computer III Report and Order*, *supra* note 49, para. 10 ("After *Computer I* took effect, technological and competitive developments in the telecommunications and computer industries exposed shortcomings in its definitional structure, and in particular its *ad hoc* approach to evaluating the 'hybrid' category.").

52. Amendments of Section 64.702 of the Comm'n's Rules and Regs. (Computer Inquiry), *Supplemental Notice of Inquiry and Enlargement of Proposed Rulemaking*, 64 F.C.C.2d 771, para. 8 (1977) [hereinafter *Computer II Supplemental Notice of Inquiry*].

53. *Computer II Final Decision*, *supra* note 15, paras. 19, 23. See also *Computer II Tentative Decision*, *supra* note 25, paras. 8-11; *Computer II Supplemental Notice of Inquiry*, *supra* note 52, paras. 3-7; *Computer II Notice of Inquiry*, *supra* note 25, paras. 8-10.

54. *Computer II Notice of Inquiry*, *supra* note 25, paras. 10, 12 (describing packet switching networks as "radically new").

and manipulate text—word processors.⁵⁵ IBM showed no hesitation in demonstrating its displeasure about AT&T's entrance into its market.

The stage was set. *Computer I* would have to be scrapped; *Computer II* was initiated in 1976.⁵⁶ Meanwhile the Internet continued in its childhood. In 1972, the nation saw the first public demonstration of ARPANet. The InterNetworking Working Group was convened in 1972.⁵⁷ Bob Metcalfe completed his Ph.D. thesis in 1973 on the Ethernet. Vint Cerf and Bob Kahn presented a paper in 1974 on the Internet Protocol.⁵⁸ In 1983, the U.S. government declared that ARPANet would migrate from the Network Control Protocol to the Internet Protocol TCP/IP.⁵⁹

B. *The Issue*

The FCC returned to square one. How should it classify these different sets of computers? The hybrid middle ground had been a source of aggravation. Dumb remote terminals had given way to smart microcomputers or minicomputers.⁶⁰ The concept of interactive computers as something that one accesses with remote terminals over the communications network, with all processing taking place at the mainframe, was vanishing. The classifications of pure communications and pure data processing were unsustainable. Now the FCC faced interactive computers forming logical networks overlaying physical networks. The Commission understatedly described its new situation as “more complicated.”⁶¹

Furthermore, the rigid safeguards of “maximum separation” were called into question. Was it really necessary for a small incumbent telephone company in the foothills of the Appalachian Mountains, with less

55. *Computer II Final Decision*, *supra* note 15, paras. 19, 23. See also *Computer II Supplemental Notice of Inquiry*, *supra* note 52, para. 4 (“In our new Computer Inquiry, we noted that peripheral devices are now capable of duplicating many of the data-manipulative capabilities which were previously available only at centralized locations housing large scale general purpose computers.”); *Computer II Notice of Inquiry*, *supra* note 25, para. 10 (noting the ability of network processing, as opposed to CPE, to achieve call forwarding, abbreviated dialing, and other functionality that would come to be incorporated into the public telephone network switches).

56. *Computer II Notice of Inquiry*, *supra* note 25.

57. Cringely, *supra* note 14; Computer History Museum, *supra* note 14.

58. Cringely, *supra* note 14.

59. *Id.*; Computer History Museum, *supra* note 14.

60. *Computer II Supplemental Notice of Inquiry*, *supra* note 52, para. 7 (“The new technology may also have rendered meaningless any real distinction between ‘terminals’ and computers.”).

61. *Computer II Final Decision*, *supra* note 15, para. 83.

than 1000 subscribers, to set up a separate corporation simply to offer data processing services?

C. *The Resolution*

1. Basic versus Enhanced Service Dichotomy

Out of the analytical turmoil over classification of these services was born the basic versus enhanced services dichotomy. This established a division between “common carrier transmission services from those computer services which depend on common carrier services in the transmission of information.”⁶² It established a transformation in the conceptual framework, migrating from attempts to determine differences between technologies to an examination of differences between services experienced by edge users. This came to be the foundation of the FCC’s Computer Inquiries.

a. *Basic Services*

“Basic service is the offering of ‘a pure transmission capability over a communications path that is virtually transparent in terms of its interaction with customer supplied information.’”⁶³ It is the transmission capacity in the physical network for the movement of information.⁶⁴ The basic service is limited to this transmission capacity⁶⁵ and does not interact with user supplied information. Computer processing, including protocol conversion, security, and memory storage, provisioned in the network for the benefit of the network, and not for the edge user, is a part of the basic service.⁶⁶ In

62. *Id.* para. 86.

63. *Computer and Comm. Indus. Ass’n v. FCC*, 693 F.2d 198, 205 n.18 (D.C. Cir. 1982); *Computer II Final Decision*, *supra* note 15, para. 96.

64. *Computer II Final Decision*, *supra* note 15, para. 93.

65. *Id.* para. 95.

66. *See* Independent Data Comm. Mfrs. Ass’n, Inc., *Memorandum Opinion and Order*, 10 F.C.C.R. 13717, para. 11, 1 Comm. Reg. (P & F) 409 (1995) [hereinafter *Frame Relay Order*] (“The use of packet switching and error control techniques ‘that facilitate the economical, reliable movement of [such] information [do] not alter the nature of the basic service.’”); *Computer III Report and Order*, *supra* note 49, para. 10 (“Data processing, computer memory or storage, and switching techniques can be components of a basic service if they are used solely to facilitate the movement of information.”); *Computer II Final Decision*, *supra* note 15, paras. 95, 98:

Use internal to the carrier’s facility of companding techniques, bandwidth compression techniques, circuit switching, message or packet switching, error control techniques, etc. that facilitate economical, reliable movement of information does not alter the nature of the basic service. In the provision of a basic transmission service, memory or storage within the network is used only to facilitate the transmission of the information from the origination to its

other words, processing used “solely to facilitate the movement of information” is a part of the basic service.⁶⁷

[T]he generic characteristic of the communications function is that the semantic content of information *is not changed* at the completion of a given process. A message entering a network is intended to arrive at its destination unchanged. Several computer operations, such as message and circuit switching, may be required to permit the message to transit the network. In this process, individual symbols may be processed, as in code conversion and error correction. Or the message may be accompanied by addressing information, such as dial pulses or message headers, which are used by the communications network for centralized message routing. The purpose of these computer operations is, nevertheless, the transmission of an unaltered message through a network and they do not constitute a data processing service.⁶⁸

Note that what is not a part of the definition of the basic service is the telephony application; basic service is the provisioned transmission service “regardless of whether subscribers use it for voice, data, video, facsimile, or other forms of transmission.”⁶⁹

The Commission wanted to ensure that carriers were able to use computers within their networks,⁷⁰ so it sought “the stimulation of economic activity in the regulated communications sector by removing ambiguities in the existing definitions.”⁷¹ By the creation of the basic versus enhanced dichotomy, the Commission sought to create regulatory certainty, permitting carriers to use computers in association with the basic service without fear that such use would be considered enhanced. If the service were enhanced, either AT&T may not be able to offer the unregulated service, or the carrier could offer the service but only through a

destination, and the carrier’s basic transmission network is not used as an information storage system. Thus, in a basic service, once information is given to the communication facility, its progress towards the destination is subject to only those delays caused by congestion within the network or transmission priorities given by the originator.

Id. para. 95.

67. *Computer III Report and Order*, *supra* note 49, para. 10.

68. *Computer II Notice of Inquiry*, *supra* note 25, para. 18.

69. *Computer II Final Decision*, *supra* note 15, para. 94 (thus we see the initial uncoupling of the telephony application from the transmission facility).

70. *Id.* para. 97. *Computer II Tentative Decision*, *supra* note 25, para. 12 (“It was stated that by defining data processing positively a carrier would be able to use computers for any purpose which is not data processing.”); *Computer II Supplemental Notice of Inquiry*, *supra* note 52, para. 10.

71. *Computer II Notice of Inquiry*, *supra* note 25, para. 16.

separate subsidiary.⁷² Thus, the Commission concluded that computer processing that “relates to and is for the purpose of providing a communications service or meeting its own in-house needs” is a basic service and may be provisioned freely by the carrier.⁷³

In its tentative decision, the Commission proposed that there would be three categories: voice, basic non-voice, and enhanced non-voice services. Both voice and basic non-voice fell within what is now known as basic services. Voice was “the electronic transmission of the human voice such that one human being can orally converse with another human being.”⁷⁴ Basic non-voice was an intriguing formulation. It was:

[T]he transmission of subscriber inputted information or data where the carrier: (a) electronically converts originating messages to signals which are compatible with a transmission medium, (b) routes these signals through the network to the appropriate destination, (c) maintains signal integrity in the presence of noise and other impairments to transmission, (d) corrects transmission errors, and (e) converts the electrical signals to usable form at the destination.⁷⁵

This formulation is noteworthy because it describes the behavior of such things as TCP/IP. Had this formulation been accepted, the regulatory status of the Internet might have been quite different. But the basic non-voice category along with the division of basic service into two parts was rejected.

As with pure communications, basic services are regulated under Title II under the same rationale, with the same concerns for discrimination and anticompetitive behavior.⁷⁶ Computers associated with basic service could be used for the provision of basic service alone.⁷⁷

b. Enhanced Services

After considerable consideration and reformation, enhanced services was defined as:

[S]ervices, offered over common carrier transmission facilities used in interstate communications, which employ computer processing applications that act on the format, content, code, protocol or similar

72. *Computer II Tentative Decision*, *supra* note 25, paras. 70-71. “[C]omputer processing applications employed within a carrier’s network in conjunction with ‘voice’ and ‘basic non-voice’ services can be performed without restriction on the use of data processing applications utilized within the framework of these two services.” *Id.* para. 70.

73. *Id.* para. 87.

74. *Id.* para. 69.

75. *Id.*

76. *Id.* para. 125 (“The objectives of the maximum separation policy are still valid today.”).

77. *Id.* para. 71.

aspects of the subscriber's transmitted information; provide the subscriber additional, different, or restructured information; or involve subscriber interaction with stored information.⁷⁸

This generally means that what goes into the network is different than what comes out of the network.

The simplicity of this definition belies the turmoil that was experienced in developing it. Originally the FCC simply envisioned a reformation of the *Computer I* definitions.⁷⁹ The types of activity covered by "data processing" were anticipated to be such things as word processing, arithmetic processing, and process control.⁸⁰ But the Commission was uncomfortable with the way that the old definition left too much to the hybrid category. Pointing to processing was insufficient as processing could be utilized by either communications or data processing. The Commission therefore transformed the concept so that, instead of trying to segregate processing capabilities, it instead would make the classification dependent on the nature of the activity involved.⁸¹ This transforms the analysis from an examination of the technology to an examination of the service provisioned.⁸²

78. Miscellaneous Rules Relating to Common Carriers, 47 C.F.R. § 64.702(a) (2002).

79. The definition was originally proposed as a reformation of "data processing." In the 1976 Supplemental Notice, the definition of data processing proposed was as follows: "'Data processing' is the electronically automated processing of information wherein: (a) the information content, or meaning, of the input information is in any way transformed, or (b) where the output information constitutes a programmed response to input information." *Computer II Tentative Decision*, supra note 25, para. 12 (citations omitted).

80. *Id.* para. 13; *Computer II Supplemental Notice of Inquiry*, supra note 52, para. 9; *Computer II Notice of Inquiry*, supra note 25, paras. 17-18.

81. *Computer II Final Decision*, supra note 15, para. 131 ("We have tried to draw the line in a manner which distinguishes wholly traditional common carrier activities, regulable under Title II of the Act, from historically and functionally competitive activities not congruent with the Act's traditional forms."); *Computer II Tentative Decision*, supra note 25, para. 15 ("Under the new definition the determination as to whether a communications or data processing service is being offered would depend on the nature of the processing activity involved.").

82. According to the Commission:

Based on this record, the mandate of this Commission in a rapidly changing technological environment, the market developments resulting from the confluence of technologies, the impossibility of defining at the enhanced level a clear and stable point at which "communications" becomes "data processing," the ever increasing dependence upon common carrier transmission facilities in the movement of information, the need to tailor services to individual user requirements, and the potential for unwarranted expansion of regulation, we conclude that the public interest would not be served by any classification scheme that attempts to distinguish enhanced services based on the communications or data processing nature of the computer processing activity performed. Accordingly, we conclude that all enhanced computer services should be accorded

The basic versus enhanced dichotomy was designed as a bright-line test,⁸³ eliminating the “hybrid” middle ground⁸⁴ and case-by-case review.⁸⁵ Enhanced services are anything⁸⁶ more than⁸⁷ the transmission capacity⁸⁸ of basic service. The Commission has articulated a three-prong test for enhanced services. It “employs computer processing applications that: (1) act on the format, content, code, protocol or similar aspects of a subscriber’s transmitted information; (2) provide the subscriber additional, different, or restructured information; or (3) involve subscriber interaction with stored information.”⁸⁹ Enhanced services do not facilitate the basic service; they alter the fundamental character of the basic service (instead, while the basic service remains the same, the enhanced service is layered on top, creating a new service for the edge user).⁹⁰ Anything that takes the basic service and uses computer processing to alter that service is enhanced. The image the Commission has at this time is of enhanced

the same regulatory treatment and that no regulatory scheme could be adopted which would rationally distinguish and classify enhanced services as either communications or data processing.

Computer II Final Decision, *supra* note 15, para. 113. See *Computer II Tentative Decision*, *supra* note 25, paras. 61-63, 68, 78 (“The regulatory focus should be upon the service being offered and not merely upon performance of a message switching function.”).

83. *Computer II Final Decision*, *supra* note 15, para. 97 (“[T]he regulatory demarcation between basic and enhanced services becomes relatively clear-cut.”).

84. *Computer II Tentative Decision*, *supra* note 25, paras. 15, 87; *Computer II Supplemental Notice of Inquiry*, *supra* note 52, para. 14.

85. *Computer and Comm. Indus. Ass’n v. FCC*, 693 F.2d 198, 209 (D.C. Cir. 1982).

86. *Id.* at 205 (“Enhanced service is *any* service other than basic service.”) (emphasis added).

87. See, e.g., Establishment of a Funding Mechanism for Interstate Operator Servs. for the Deaf, *Memorandum Opinion and Order*, 11 F.C.C.R. 6808, para. 16, 2 Comm. Reg. (P & F) 744 (1996) [hereinafter *Section 255 Order*]; Bell Atl. Tel. Cos., Offer of Comparably Efficient Interconnection to Providers of Video Dialtone-Related Enhanced Servs., *Order*, 11 F.C.C.R. 985, para. 2 n.5 (1995) (“‘Enhanced services’ use the telephone network to deliver unregulated services that provide *more than* a basic voice transmission offering.”) (emphasis added); Bell Operating Cos.’ Joint Petition for Waiver of Computer II Rules, *Memorandum Order and Opinion*, 10 F.C.C.R. 1724, para. 1 n.3, 76 Rad. Reg.2d (P & F) 1536 (1995) [hereinafter *BOC’s Joint Petition*]; *Computer II Tentative Decision*, *supra* note 25, para. 69. (“An ‘enhanced non-voice service’ is any non-voice service which is more than the ‘basic’ service, where computer processing applications are used to act on the form, content, code, protocol, etc., of the inputted information.”).

88. *Computer II Final Decision*, *supra* note 15, para. 95 (stating “we believe that a basic transmission service should be limited to the offering of transmission capacity between two or more points suitable for a user’s transmission needs”).

89. *Section 255 Order*, *supra* note 87, para. 16.

90. *Id.* Compare with *Computer II Tentative Decision*, *supra* note 25, para. 77 (“Of the three categories of services that we have established—‘voice,’ ‘basic non-voice,’ and ‘enhanced non-voice’—‘voice’ and ‘basic non-voice’ services may employ any computer processing applications as long as they do not change the nature of the service.” (punctuation altered)).

service providers ("ESPs") acquiring basic services, adding enhanced services, and then selling the bundled service to consumers on a resale basis.⁹¹

The Commission affirmed its *Computer I* finding that enhanced services should be unregulated on the grounds that the market was competitive.⁹² The Commission has found that e-mail,⁹³ voice mail,⁹⁴ the World Wide Web,⁹⁵ newsgroups,⁹⁶ fax store-and-forward, interactive voice response, gateway, audiotext information services, and protocol processing⁹⁷ are enhanced services.

Internet access service takes the basic transmission capacity and transforms it for the benefit of the edge users. An Internet user and an Internet service provider ("ISP") take transmission capacity and add to it in order to enable Internet access. The physical network speaks analog dial tone. The equipment at the edge of the logical network speaks IP. Therefore, the language of the basic service is transformed into a language that the edge users speak. It is the edge computers, and not the transmission capacity, that adds Internet packets (user-supplied information). Those Internet packets are not a necessary component of the basic service; the basic service is already complete and does not need the packets in order to be successful.

91. *Computer II Tentative Decision*, *supra* note 25, para. 73.

92. *Computer II Final Decision*, *supra* note 15, paras. 7, 127-132. "The market is truly competitive. Experience gained from the competitive evolution of varied market applications of computer technology offered since the *First Computer Inquiry* compels us to conclude that regulation of enhanced services is simply unwarranted." *Id.* para. 128. *Computer and Comm. Indus. Ass'n v. FCC*, 693 F.2d 198, 207 (D.C. Cir. 1982); Policy and Rules Concerning the Interstate, Interexchange Marketplace, *Report and Order*, 16 F.C.C.R. 7418, para. 3, 23 Comm. Reg. (P & F) 641 (2001) [hereinafter *CPE Order*] (describing market as truly competitive); Access Charge Reform, *Notice of Proposed Rulemaking, Third Report and Order, and Notice of Inquiry*, 11 F.C.C.R. 21354, para. 285, 5 Comm. Reg. (P & F) 604 (1996) ("The Internet access market is also highly competitive and dynamic, with over 2,000 companies offering Internet access as of mid-1996.").

93. See Federal-State Joint Board on Universal Serv., *Report to Congress*, 13 F.C.C.R. 11501, para. 78, 11 Comm. Reg. (P & F) 1312 (1998) [hereinafter *Stevens Report*].

94. *CPE Order*, *supra* note 92, para. 2.

95. See *Stevens Report*, *supra* note 93, para. 76.

96. *Id.* para. 77.

97. *CPE Order*, *supra* note 92, para. 2; 1998 Biennial Reg. Review—Review of Customer Premises Equip. and Enhanced Servs. Unbundling Rules in the Interexchange, Exch. Access and Local Exch. Mkts., *Further Notice of Proposed Rulemaking*, 13 F.C.C.R. 21531, para. 1 n.2 (1998) [hereinafter *CPE Further Notice*].

c. *Adjunct Services*

A challenge for the Commission was what to do with adjunct services. Adjunct services “facilitate the use of traditional telephone service but do not alter the fundamental character of telephone service.”⁹⁸ The FCC concluded that adjunct services would “be regulated in the same fashion as the underlying service—whether basic or enhanced—with which it is associated in a particular offering.”⁹⁹ Note that it is never the other way around—the underlying service does not take on the classification of the adjunct service. The existence of the adjunct service does not alter the regulatory classification of the underlying service.¹⁰⁰

Some examples follow: directory assistance provides a telephone number in order to facilitate the use of the basic telephone network. Therefore, directory assistance takes on the characteristic of the basic service (it does not transform the basic service into an enhanced service).¹⁰¹ Reverse directory assistance provides a name or an address that is used for something other than the basic telephone service. Because it does not facilitate the use of the network, it is not an adjunct to the network.¹⁰² Services that facilitate use of the basic service by individuals with disabilities are also basic services.¹⁰³

d. *Protocol Processing*

The Commission was confronted with how to deal with protocol processing. As much as the Commission strove to eliminate the middle ground of “hybrid” services, protocol processing remained a gray area. The Commission conceded that protocol processing could be either basic or enhanced. It set forth a straightforward analysis in order to determine in which category such processing should fall. This analysis is the same as determining whether an adjunct service is a basic service. Generally, protocol conversion services are enhanced services.¹⁰⁴ Traditionally, however, three things were considered basic:

[P]rotocol processing: 1) involving communications between an end user and the network itself (e.g., for initiation, routing, and termination of calls) rather than between or among users; 2) in connection with the

98. US West Comm., Inc., Petition for Computer III Waiver, *Order*, 11 F.C.C.R. 1195, para. 2 n.5, 1 Comm. Reg. (P & F) 1261 (1995) [hereinafter *US West Petition*].

99. *Computer III Report and Order*, *supra* note 49, para. 7.

100. *US West Petition*, *supra* note 98, para. 2 n.5.

101. *Section 255 Order*, *supra* note 87, paras. 17-18.

102. *US West Petition*, *supra* note 98, para. 26.

103. *Section 255 Order*, *supra* note 87, paras. 17-18.

104. *Computer III Report and Order*, *supra* note 49, paras. 20-23; *Computer II Final Decision* *supra* note 15, para. 99; *Frame Relay Order*, *supra* note 66, paras. 17-18.

introduction of a new basic network technology (which requires protocol conversion to maintain compatibility with existing CPE); and 3) involving internetworking (conversions taking place solely within the carrier's network to facilitate provision of a basic network service, that result in no net conversion to the end user).¹⁰⁵

As with the adjunct services analysis, where protocol conversion is for the benefit and facilitation of the network as opposed to the edge user, it is a basic service.

The Commission concluded that the simple involvement of packet-switching is not sufficient to conclude that a service is enhanced. AT&T came up with a peculiar resolution with its Interspan service. With this offering, AT&T provisioned a packet-switched frame relay service over a high-speed¹⁰⁶ connection, bundling it with enhanced services, and attempted to sell it as a single indivisible service. The Independent Data Communications Manufacturers Association challenged the provisioning, arguing that under *Computer II*, AT&T had to unbundle the basic from the enhanced service and offer the basic service to other enhanced service providers. This time, however, the basic service was the AT&T packet-switched frame relay service.

AT&T argued that the Interspan offering as a whole was an information service. In the alternative, AT&T argued that contamination theory meant that the provisioning of the information service indicated that the whole offering was an information service.

The Commission rejected this argument. The frame relay service "provides transport of customer data 'transparently' across the AT&T frame relay network."¹⁰⁷ Regardless of whether the service provisioned to the customer comes as an information service, AT&T was required to unbundle the basic from the enhanced service.¹⁰⁸ The Commission noted that it has never applied the contamination theory¹⁰⁹ to facility-based providers.¹¹⁰

105. Implementation of the Non-Accounting Safeguards of Sections 271 and 272 of the Comm. Act of 1934, as Amended, *Order on Reconsideration*, 12 F.C.C.R. 2297, para. 2, 6 Comm. Reg. (P & F) 972 (1997) [hereinafter *Non-Accounting Safeguards Order on Reconsideration*]. See also *Frame Relay Order*, *supra* note 66, paras. 14-16.

106. *Frame Relay Order*, *supra* note 66, para. 6.

107. *Id.* para. 40.

108. *Id.* para. 41.

109. Contamination theory is the argument that when an enhanced service provider acquires telecommunications services, combines it with enhanced services, and then sells to consumers, the enhanced service "contaminates" the basic service, making the service as a whole an enhanced service. The enhanced service provider, by "reselling" telecommunications service, does not thereby become a carrier. *Id.* para. 18.

110. *Id.* paras. 42-45.

What do we take away from these decisions? Many things. AT&T frame relay confirmed that the Commission in *Computer II* intended to open up the communications facility over which enhanced services could be provisioned, regardless of the nature of the basic service. The basic service can be packet-switched and it need not involve telephony. It can be broadband and digital. AT&T's Interspan offering was a far cry from POTS;¹¹¹ *Computer II* still applied.

The protocol processing issue has an odd history. Originally, the carriers wanted the protocol processing to be categorized as basic services. At that time, the Bell operating companies ("BOCs") either were not permitted to offer unregulated service pursuant to the Modified Final Judgment, or they were permitted, but only through a separate subsidiary. Thus, unless protocol conversion was basic, they could not offer it.¹¹² By *Computer III*, carriers such as AT&T wanted protocol conversion to be categorized as enhanced services. Those services, which they were then permitted to offer, would not fall under Title II regulation.

e. The Telecommunications Act of 1996 and "Information Services"

While the year 1996 brought the Telecommunications Act with its new terminology including "telecommunications," "telecommunications service," and "information service," it did not use the terms "basic" or "enhanced services." The Commission concluded¹¹³ that Congress codified the basic versus enhanced dichotomy using the new terms of "telecommunications" and "information services."¹¹⁴ The FCC concluded that all enhanced services are information services, although not all information services are necessarily enhanced services. The explanation for this conclusion is rooted in the physical network. Enhanced services are

111. POTS, a basic term in the communications field, means "plain old telephone service."

112. *Computer III Report and Order*, *supra* note 49, paras. 33-35.

113. *CPE Order*, *supra* note 92, para. 2 n.6. ("The Commission has concluded that Congress sought to maintain the basic/enhanced distinction in its definition of 'telecommunications services' and 'information services,' and that 'enhanced services' and 'information services' should be interpreted to extend to the same functions."); *CPE Further Notice*, *supra* note 97, para. 1 n.2.

114. According to the Telecommunications Act of 1996:

The term "information service" means the offering of a capability for generating, acquiring, storing, transforming, processing, retrieving, utilizing, or making available information via telecommunications, and includes electronic publishing, but does not include any use of any such capability for the management, control, or operation of a telecommunications system or the management of a telecommunications service.

47 U.S.C. § 153(20) (2000).

provisioned over *common carriers*; information services are provisioned over *telecommunications* (not necessarily telecommunications services). While some entities that provision telecommunications are telecommunications services (“common carriers”), not all are. Otherwise, the Commission concluded that the term “information services” should be “interpreted to extend to the same functions” and understood in a consistent manner of enhanced services.¹¹⁵

2. Safeguards

a. *Maximum Separation to Structural Separation*

The problem of the bottleneck communications facility remained present on the Commission’s mind:

The importance of the control of local facilities, as well as their location and number, cannot be overstate[d]. As we evolve into more of an information society, the access/bottleneck nature of the telephone local loop will take on greater significance. Although technological trends suggest that hard-wire access provided by a telephone company will not be the only alternative, its existing ubiquity and the amount of underlying investment suggest that whatever changes do occur will be implemented gradually.¹¹⁶

The Commission continued to be concerned that communications services adequately met the needs of computer processing technology.¹¹⁷ The Commission affirmed its recognition of the value to individuals and in the economy of these new innovative services.¹¹⁸ It also affirmed its concern that the communications facility be maintained as an open platform available to all and that cross-subsidization be prevented.¹¹⁹

However, the Commission’s theme concerning the inefficiency of structural separation began to grow. The Commission developed the opinion that it was not necessary to impose structural separation on all carriers, but only on those with sufficient market size to be able to abuse their position. Those carriers with insufficient size and market position do

115. *CPE Order*, *supra* note 92, para. 2 n.6; *see also CPE Further Notice*, *supra* note 97, para. 1 n.2; *Non-Accounting Safeguards Order on Reconsideration*, *supra* note 105; *Computer III Further Remand Proceedings: Bell Operating Co. Provision of Enhanced Servs., Further Notice of Proposed Rulemaking*, 13 F.C.C.R. 6040, para. 40 (1998).

116. *Computer II Final Decision*, *supra* note 15, para. 219.

117. *Id.* paras. 100-01; *Computer II Tentative Decision*, *supra* note 25, para. 66 (“A regulatory structure must be established which adequately addresses present and foreseeable market applications of computer processing technology.”).

118. *Computer II Tentative Decision*, *supra* note 25, para. 66.

119. *Id.* paras. 71-73 (seeking to “insure the availability of transparent common carrier transmission facilities to all on an equal basis.”).

not have the same incentives and thus do not require the same level of safeguards:

Moreover the monopoly rent that a company can extract from such bottleneck facilities is likely to bear some relation to the number of subscribers served. It is probable that many of the new information services that will be offered over telephone lines will incur developmental expenses that will require large customer bases. As we observed, many of them are likely to be national in scope. A telephone company serving a relatively small proportion of the nation's homes and businesses is perhaps less likely to pursue such activities independently. For the most part, long-term profitable entry into the enhanced services field will probably require penetration of the market on a national scale, and it is unlikely that such a national operation could be effectively subsidized from a small pool of monopoly revenues, or that it could gain any significant competitive advantage by restricting the access of its competitors to a very limited network of underlying facilities. The effectiveness of other regulatory tools available to this Commission and other authorities is also considerably improved when they are applied to smaller telephone carriers.¹²⁰

Therefore structural safeguards requiring separate subsidiaries, formerly known as maximum separation, continued to be applied only to the large carriers: AT&T and GTE.¹²¹ Other carriers merely had to comply with the unbundling rules discussed *infra*.¹²² In 1984, AT&T begot the BOCs and the BOCs found themselves under the structural separation of *Computer II*.¹²³ The *Computer II* structural separation safeguards were consistent with *Computer I*'s maximum separation, requiring a high degree of separation, independence, and visibility.¹²⁴

b. Unbundling

Smaller carriers, as stated *infra*, lacked the resources from the regulated side with which to subsidize their unregulated side. They had fewer customers and less ability to discriminate, turning away paying

120. *Computer II Final Decision*, *supra* note 15, para. 219.

121. *Computer III Report and Order*, *supra* note 49, para. 14 (AT&T established AT&T Information Systems, Inc. as its separate subsidiary). *See also* Amendment of Section 64.702 of the Comm'n's Rules and Regs. (Second Computer Inquiry), *Memorandum Opinion and Order*, 79 F.C.C.2d 953, para. 5 (1980).

122. *Computer II Final Decision*, *supra* note 15, paras. 12, 215-28. "There is little need to subject carriers to the resale structure if such entities lack significant potential to cross-subsidize or to engage in other anticompetitive conduct." *Id.* para. 12.

123. *US West Petition*, *supra* note 98, para. 2; *BOC's Joint Petition*, *supra* note 87, para. 3; *Computer III Further Remand Proceedings: Bell Operating Co. Provision of Enhanced Servs.*, *Notice of Proposed Rulemaking*, 10 F.C.C.R. 8360, paras. 3-4 (1995) [hereinafter *Computer III Remand 1995*].

124. *See* 47 C.F.R. § 64.702 (2002).

consumers. In light of the reduced incentive in the smaller markets and the reduced resources smaller carriers might have to administer a separate subsidiary, the relative cost of "maximum separation" did not justify the requirement on smaller carriers.

Nevertheless, the small carriers remained in a bottleneck position in the market as the sole supplier of the essential communications service. They still had the incentive and opportunity to take advantage of their monopoly control of the transmission capacity, and to act in anticompetitive ways. In order to ensure that this bottleneck did not hinder the enhanced services market, the Commission required that all facilities-based common carriers who desire to provide enhanced services must unbundle the basic from the enhanced services. They also had to provide the basic service to all other enhanced services on the same terms and conditions.¹²⁵ The carrier could provide the service on a bundled basis, but had to make the unbundled offering to unaffiliated ESPs.¹²⁶

Computer I never mentioned CPE because there was no thought that the CPE would get smart enough to be a part of the unregulated service. As a result, the Commission promulgated as a part of *Computer II*'s unbundling rules a prohibition against carriers bundling CPE with the provision of telecommunications service.¹²⁷ This prohibition was eliminated in 2001.¹²⁸

D. Layers

With this new conceptual framework, the Computer Inquiries, albeit not necessarily overtly, adopted a layered model of regulation. The Layered Model of Regulation generally divides communications policy into (1) a physical network layer,¹²⁹ (2) a logical network layer, (3) applications and services layer, and (4) a content layer.¹³⁰ These layers emanate from the

125. *Computer II Final Decision*, *supra* note 15, para. 231. See, e.g., *CPE Order*, *supra* note 92, para. 4; *CPE Further Notice*, *supra* note 97, para. 33; *Frame Relay Order*, *supra* note 66, para. 59.

126. *CPE Order*, *supra* note 92, para. 39.

127. 47 C.F.R. § 64.702(e) (2002); *Computer II Final Decision*, *supra* note 15, paras. 8-10; see, e.g., *CPE Further Notice*, *supra* note 97, para. 2.

128. *CPE Order*, *supra* note 92, para. 1.

129. Note that physical networks include wireless networks. Although it may initially sound confusing, the wireless spectrum is as physical as copper wires, fiber, or coaxial cable.

130. See Kevin Werbach, A Layered Model for Internet Policy, presented at Telecommunications Policy Research Conference (Sept. 2000), available at <http://www.edventure.com/conversation/article.cfm?counter=2414930>; Robert M. Entman, *Transition to an IP Environment*, THE ASPEN INSTITUTE (2001); Michael L. Katz, *Thoughts on the Implications of Technological Change for Telecommunications Policy*, THE ASPEN INSTITUTE (2001); Douglas C. Sicker, Further Defining a Layered Model for Telecommunications Policy, presented at Telecommunications Policy Research Conference

first principal concern for markets. These differing layers demarcate natural boundaries between markets. These market boundaries permit communications regulation, where necessary, to be particularly successful.¹³¹ By conceptualizing the policy as layers, the analyst is capable of grouping and segregating issues. Issues related to the physical network layer (i.e., common carrier regulation, spectrum policy, cable franchises) are different from those of the logical layer (i.e., open access, peering) and are different from those in the content layer (i.e., intellectual property, gambling, taxation, libel). Thus, by conceptualizing the policy as layers, the analyst is enabled to identify markets, clarify issues, create boundary regulations that are effective, and, in so doing, target solutions where issues reside without interfering with other industries and opportunities. The Layered Model is a market policy mapped onto a technical conception.

The Layered Model of Regulation is not the same as the OSI (“Open Systems Interconnection”) reference model¹³² or the IP stack.¹³³ However, it could be said the Layered Model of Regulation takes its inspiration from and is enabled by these technical reference models. These reference models layer different protocols which enable the provisioning of different services. Each layer is separate from the one above and the one below. The degree of separation is sufficiently complete so that the service provisioned at one layer can be provisioned by one provider while the service provisioned at another layer can be serviced by another provider.¹³⁴

2002 (Sept. 1, 2002), available at http://intel.si.umich.edu/tprc/papers/2002/95/TPRC_L_model.pdf; Douglas C. Sicker, Further Defining a Layered Model for Telecommunications Policy (Oct. 3, 2002), available at <http://intel.si.umich.edu/tprc/papers/2002/95/LayeredTelecomPolicy.pdf>; COMPUTER SCIENCE AND TELECOMMUNICATIONS BOARD, NATIONAL RESEARCH COUNCIL, BROADBAND: BRINGING HOME THE BITS 182 (2002), available at <http://www.nap.edu/html/broadband/notice.html> (calling for logical layer unbundling).

131. See Gerald R. Faulhaber, *Policy-Induced Competition: The Telecommunications Experiments*, Aug. 26, 2001, at <http://rider.wharton.upenn.edu/~faulhaber/Policy-Induced%20Competition.pdf> (to be published in INFORMATION ECONOMICS AND POLICY).

132. OSI Reference Model at http://searchnetworking.techtarget.com/sDefinition/0,,sid7_gci523729,00.html (last visited Nov. 18, 2002).

133. See, e.g., DARPA Internet Program Protocol Specifications (Jon Postel ed., 1981), RFC 791, at <http://www.ietf.org/rfc/rfc0791.txt> (last visited Oct. 10, 2002); Shvetima Gulati, *The Internet Protocol, Part One: The Foundations*, ACM CROSSROADS STUDENT MAGAZINE, July 2000, at <http://www.acm.org/crossroads/columns/connector/july2000.html> (last visited Nov. 18, 2002).

134. Physical network services are provisioned by telephone, cable, and wireless companies. Logical network services are provisioned by ISPs and other computer networks. Applications may be provisioned by service providers (i.e., Web hosts, e-mail servers, or USENET servers) or the applications may be used by the edge user on the edge user’s computer. Content may be created by the edge user chatting in a chat room or posting Web pages, or it might be created by an information service such as an online news service or a streamed radio station. These are different services provisioned at different layers by

A prime example is the Internet. The Internet protocol is designed as a thin protocol in the middle of the layers. It is agnostic as to applications above or physical networks below.¹³⁵ By design, physical networks need only be compatible with or optimized for IP; if IP over the physical network is successful, then the physical network is indifferent to and need not be optimized for any particular application or service. Conversely, applications and services are designed to operate over IP; they are indifferent to and need not be optimized for any particular physical network. This creates a great deal of separation between physical networks, logical (IP) networks, and applications and services.

The result is the robustness and flexibility of the Internet. Any application over IP can be provisioned over any network. An edge user can, for example, download a variety of applications to a laptop. In one moment the laptop can be connected using a dial-up connection. In the next moment it might be connected using a Wi-Fi wireless card. Finally, it might be connected over a corporate local access network ("LAN"). At any moment, the edge user is fully capable of using any application in any of these settings (assuming sufficient bandwidth). The logical network is not optimized for any particular application or any particular physical network.

The FCC implicitly identified that within the different layers are different markets and different regulatory concerns:

- The physical network (layers 1 and 2 of the OSI reference model) is "basic services" provisioned by telephone carriers regulated under Title II.
- The logical network (layers 3 and 4) is TCP/IP or Internet access provisioned by ISPs, directly and intentionally benefiting from the Computer Inquiry safeguards.
- Above the logical layer are services, applications, and content provisioned by applications service providers, content providers, and a host of other players, all generally removed from communication regulation.

The Commission recognized that the communications facility and the enhanced service are separate and identifiable elements of the service provisioned to the consumer.¹³⁶ "The underlying carrier's transmission facilities become the basic building block upon which computer facilities

different equipment and different companies.

135. This is in contrast to, for example, the telephone network which is a physical transmission network optimized for a single application, telephony.

136. *Computer II Tentative Decision*, *supra* note 25, para. 73 ("The common carrier transmission facility necessary for the provision of an 'enhanced' service becomes a separate part of the service which must be acquired pursuant to applicable tariff . . .").

can be added to perform myriad combinations and permutations of processing activities.”¹³⁷ By conceiving it as one network service layered on top of another, the underlying layer is made into an open communication platform available to all:

The isolation of the transmission component enables any carrier to provide an enhanced . . . service on the same basis, without threat of unfair competitive advantage accruing to a given carrier by virtue of its control over the underlying transmission facilities. The transmission facility would be common to all entities and removed as a competitive element of the service.¹³⁸

An entity, in a given moment, is either provisioning physical network transmission capacity, or logical network Internet access services. This is a “mutually exclusive” situation described by the Commission.¹³⁹ A service provider in a given moment is provisioning one or the other, but not both simultaneously. For example, the SS7 switch provisions physical network telephone services, not logical network layer Internet services. The IP router provisions Internet access service; it does not provision physical network transmission capacity. A provider can provide both such services, but the services themselves remain distinct.¹⁴⁰

This layered approach to the Computer Inquiries means clear segregation between basic and enhanced services. Basic is never enhanced; enhanced is never basic. The enhanced service is what is done over the basic transmission facility; it is never the transmission facility. The basic is always the passing of content back and forth; it is never enhanced processing of that content. Enhanced services provisioning always means a basic service plus an enhanced service (an enhanced service cannot exist

137. *Id.* para. 75.

138. *Id.* para. 73.

139. *Stevens Report*, *supra* note 93, para. 57. *Computer II Tentative Decision*, *supra* note 25, para. 15; *Computer II Supplemental Notice of Inquiry*, *supra* note 52, para. 14 (“Under this proposed standard it would be inconsistent to talk in terms of a communications service having non-separable data processing *functions*, since communications and data processing now would be considered mutually exclusive activities.”).

140. *Stevens Report*, *supra* note 93, para. 57 (“[W]e find strong support in the text and legislative history of the 1996 Act for the view that Congress intended ‘telecommunications service’ and ‘information service’ to refer to separate categories of services.”). This is true in the broadband context as well. Deployment of Wireline Servs. Offering Advanced Telecomms. Capability, *Memorandum Opinion and Order, and Notice of Proposed Rulemaking*, 13 F.C.C.R. 24011, para. 36, 13 Comm. Reg. (P & F) 1 (1998):

An end-user may utilize a telecommunications service together with an information service, as in the case of Internet access. In such a case, however, we treat the two services separately: the first service is a telecommunications service (*e.g.*, the xDSL-enabled transmission path), and the second service is an information service, in this case Internet access.

Id.

without an underlying transmission service). Identifying something as an enhanced service does not alter the underlying transmission capacity as basic.¹⁴¹

This layered model approach is followed by the FCC throughout *Computer II* and *Computer III*.

E. Legacy of *Computer II*

Computer II brought a radical revision in framework. The rationale and the policy goals, however, remained the same. As with *Computer I*, the enhanced services market was viewed as dynamic, innovative, and competitive, while the basic services were viewed as having both the incentive and the opportunity to act anticompetitively.¹⁴²

The premier legacy of *Computer II* is the establishment of the basic versus enhanced dichotomy. This layered approach to regulation becomes the bedrock of the Computer Inquiries success, and distinguishes it from other international schemes. It established a bright-line test and amplified the separation of the communications facility from the enhancement.

This is a “dichotomy.” These are things that are opposed to each other. It is a competitive market as opposed to a noncompetitive market. It is an essential service as opposed to innovation built on top. It is a physical network as opposed to a logical network. It is a regulated service as opposed to an unregulated service.

The dichotomy is a bottom-up analysis. First, the basic telecom service is identified. This is the policy concern. This is the restrained market. This is the essential service. Anything more is more. Anything more is competitive. Anything more is not the essential service but the innovation. Anything more is therefore unregulated.

The next significant legacy of *Computer II* is a cost-benefit analysis of structural separation. This theme will lead into *Computer III*, resulting in further drastic revisions to the Computer Inquiry safeguards.

141. Compare this to the Contamination Theory. See *infra* note 109. The underlying transmission service even in Contamination Theory remains a basic service. Contamination Theory merely recognizes that the supply of the transmission facility is the carrier; regulations appropriate to the basic service are appropriate for the carrier and need not be applied to an enhanced service provider who is taking that facility, enhancing it, and selling it to consumers.

142. *Computer II Tentative Decision*, *supra* note 25, para. 125 (“The objectives of the maximum separation policy are still valid today.”).

Finally, *Computer II* continued to make clear that, while enhanced services themselves were not regulated, they were the clearly intended beneficiaries of the safeguards.

IV. COMPUTER III (1985)

A. *The Setting*

This time the Commission managed to have four years pass without reopening its proceeding. It is 1985. The Domain Name System had just been introduced the previous year. The first commercial ISP had yet to be established.¹⁴³ The National Science Foundation Network (“NSFNET”) would come online in 1986. And the Internet Engineering Task Force (“IETF”) had not yet had its first meeting.¹⁴⁴

In 1984, AT&T had gone through divestiture forming the BOCs.¹⁴⁵ The BOCs for their part received official blessing from Judge Greene, permitting them to begin to enter the enhanced services market in 1987 and to fully enter the market in 1991.¹⁴⁶ In 1985, the Commission launched *Computer III*,¹⁴⁷ initiating the last phase of the regulatory proceeding that would have so many implications for the deployment of the Internet before the commercial Internet truly broke.

B. *The Issue*

The conceptual framework of the Computer Inquiries had been settled in *Computer II* with the establishment of the basic versus enhanced service dichotomy. The policy objectives remain the same. What changes is implementation.

Driving *Computer III* was the perception that the separate subsidiary requirements of *Computer II* “impose significant costs on the public in decreased efficiency and innovation that substantially outweigh [sic] their

143. The World’s Homepage, at <http://www.theworld.com/> (last modified Nov. 1, 2002) (established in 1989).

144. Cringely, *supra* note 14; Computer History Museum, *supra* note 14.

145. *Computer III Report and Order*, *supra* note 49, para. 24.

146. United States v. W. Elec. Co., 673 F.Supp. 525 (D.D.C. 1987), *aff’d in part, rev’d in part*, 900 F.2d 283 (D.C. Cir. 1990), *cert denied* MCI Comm. Corp. v. United States, 498 U.S. 911 (1990); Filing and Review of Open Network Architecture Plans, *Memorandum Opinion and Order*, 4 F.C.C.R. 2449, para. 29, 65 Rad. Reg.2d 1361 (P & F) (1988) [hereinafter *ONA Review*]; *Accounting Safeguards*, *supra* note 48, para. 3 n.5 (“The information services restriction was modified in 1987 to allow BOCs to provide voice messaging services and to transmit information services generated by others. In 1991, the restriction on BOC ownership of content-based information services was lifted.” (citations omitted)).

147. Third Computer Inquiry, *Proposed Rule*, 50 Fed. Reg. 33,581 (Aug. 20, 1985).

benefits in limiting the ability of AT&T and the BOCS to make unfair use of their regulated operations for the benefit of their unregulated, enhanced services activities.”¹⁴⁸ Believing that it could achieve appropriate safeguards, perhaps develop a new and more progressive framework, and also eliminate the cost of the separate subsidiary, the Commission sought to migrate from structural safeguards to non-structural safeguards. In order to do so, the Commission had to establish a scheme that would satisfy its original concerns regarding anticompetitive behavior and continue to make available an open communications platform. The Commission’s solution was, in the short term, Comparatively Efficient Interconnection (“CEI”) and, in the long term, Open Network Architecture (“ONA”).

C. *The Resolution*

1. Comparatively Efficient Interconnection

CEI was seen as an interim solution while BOCs create ONA plans. Under CEI, BOCs would be permitted to enter into enhanced services markets on a non-structurally separated basis (a separate subsidiary was no longer needed; the ESP could be integrated into the BOC) on the condition that they make available¹⁴⁹ CEI plans. These CEI plans were intended to detail what the BOC was provisioning to its affiliated ESP; BOCs would be required to make these provisions available to all other non-affiliated ESPs on the same terms and conditions.¹⁵⁰

148. See *Computer III Report and Order*, *supra* note 1, para. 3. See also *Computer III Further Remand Proceedings: Bell Operating Co. Provision of Enhanced Servs., Report and Order*, 14 F.C.C.R. 4289, para. 7, 15 Comm. Reg. (P & F) 149 (1999) [hereinafter *Computer III Order 1999*]:

In *Computer III*, after reexamining the telecommunications marketplace and the effects of structural separation during the six years since *Computer II*, the Commission determined that the costs of structural separation out-weighed the benefits, and that nonstructural safeguards could protect competitive ESPs from improper cost allocation and discrimination by the BOCs while avoiding the inefficiencies associated with structural separation.

Id.

149. Under current rules, CEI Plans need not be submitted to the FCC but must be posted to BOC Web sites. *Id.* paras. 4, 11-12; *Computer III Further Remand Proceedings: Bell Operating Co. Provision of Enhanced Servs., Order*, 14 F.C.C.R. 21628, para. 6, 18 Comm. Reg. (P & F) 1344 (1999) [hereinafter *Computer III Order on Reconsideration 1999*].

150. A CEI plan must include information on interface functionality, unbundling of basic services, resale, technical characteristics, installation, maintenance and repair, end-user access, CEI availability, minimization of transport costs, and recipients of CEI. *Computer III Further Remand Proceedings: Bell Operating Co. Provision of Enhanced Servs., Further Notice of Proposed Rulemaking*, 13 F.C.C.R. 6040, para. 4, 15 Comm. Reg. (P & F) 2017 (1998) [hereinafter *Computer III Further Notice 1998*]; *BOC’s Joint Petition*, *supra* note 87, para. 3. See also Ameritech’s Comparably Efficient Interconnection Plan for Electronic

2. Open Network Architecture

The next step was the move toward Open Network Architecture. This was a radical approach to the issue. While the Commission was in retreat on the notion and value of separate subsidiaries, ONA imposed a progressive vision of the network. ONA required BOCs to break their networks down into basic building blocks, and to make those building blocks available to ESPs to build new services.¹⁵¹ Although not identical to unbundled network elements,¹⁵² the BOCs would be required to break apart the basic service offering for the benefit of the ESP market. These BOC building blocks would be divided among Basic Service Elements (i.e., Calling Number Identification), Basic Serving Arrangements (fundamental tariffed switching and transport services), Complimentary Network Services (i.e., stutter dial tone, call waiting, call forwarding, call forwarding on busy, hunting), and Ancillary Network Services (i.e., billing services, collection, protocol processing).¹⁵³

BOCs were required to file ONA plans regardless of whether they entered the ESP market.¹⁵⁴ Having successfully filed an ONA plan with the Commission, BOCs would then be permitted to provide integrated ESP services without filing a CEI plan.¹⁵⁵ There was also guidance on how ESPs could request the provision of new services.¹⁵⁶

Vaulting Serv., *Order*, 13 F.C.C.R. 80, para. 16 (1997) [hereinafter *Ameritech's CEI Plan*] ("The CEI requirements are designed to give ESPs equal and efficient access to the basic services that the BOCs use to provide their own enhanced services.").

151. *Computer III Order 1999*, *supra* note 148, para. 8 n.17:

ONA is the overall design of a carrier's basic network services to permit all users of the basic network, including the information services operations of the carrier and its competitors, to interconnect to specific basic network functions and interfaces on an unbundled and equal-access basis. The BOCs and GTE through ONA must unbundle key components, or elements, of their basic services and make them available under tariff, regardless of whether their information services operations utilize the unbundled components. Such unbundling ensures that competitors of the carrier's information services operations can develop information services that utilize the carrier's network on an economical and efficient basis.

Id. See also *Computer III Remand 1995*, *supra* note 123, paras. 15-16.

152. See 47 U.S.C. § 251 (2000).

153. *Computer III Further Notice 1998*, *supra* note 150, para. 26. See also *ONA Review*, *supra* note 146, para. 56.

154. *Ameritech's CEI Plan*, *supra* note 150, para. 7, n.18. See also Bell Operating Cos. Joint Petition for Waiver of Computer II Rules, *Order*, 10 F.C.C.R. 13758, para. 26, 1 Comm. Reg. (P & F) 690 (1995).

155. *BOC's Joint Petition*, *supra* note 87, para. 3.

156. *Computer III Further Notice 1998*, *supra* note 150, paras. 81-84.

The *Computer III* proceeding also set forth a set of other safeguards that fell upon different entities: annual ONA reporting,¹⁵⁷ network information disclosure,¹⁵⁸ cross-subsidization prohibitions,¹⁵⁹ accounting safeguards,¹⁶⁰ and customer proprietary network information.¹⁶¹

3. Litigation

Things did not go quite as planned. In *California III*, the Ninth Circuit reviewed the Commission's move from structural to non-structural safeguards and:

found that, in granting full structural relief based on the BOC ONA plans, the Commission had not adequately explained its apparent "retreat" from requiring "fundamental unbundling" of BOC networks as a component of ONA and a condition for lifting structural separation. The court was therefore concerned that ONA unbundling, as implemented, failed to prevent the BOCs from engaging in discrimination against competing ESPs in providing access to basic services.¹⁶²

The Court therefore vacated and remanded the proceeding back to the FCC.

On remand, the Commission concluded that the court in *California III* vacated only the Commission's ONA rules, not the CEI rules. Therefore, the Commission issued the Interim Waiver Order that permitted BOCs to provide enhanced services if they complied with the CEI rules.¹⁶³ In addition, BOCs must comply with procedures set forth in the ONA plans that they had already filed with and had been approved by the Commission.¹⁶⁴ The Commission also released a Further Notice of Proposed Rulemaking in order to resolve the issues raised in *California III*.¹⁶⁵ This rulemaking, pursuant to the remand, is still pending. In 2002,

157. *Id.* para. 103.

158. 47 C.F.R. § 64.702(d)(2) (2001).

159. 47 U.S.C. § 254(k) (2000); 47 C.F.R. § 64.901(c) (2001).

160. 47 C.F.R. § 64 (2001).

161. 47 U.S.C. § 222 (2000).

162. *Computer III Further Notice 1998*, *supra* note 150, para. 15 (footnotes omitted). *See California v. FCC*, 39 F.3d 919 (9th Cir.), *cert. denied*, 514 U.S. 1050 (1994).

163. *See Computer III Further Notice 1998*, *supra* note 150, para. 16.

164. *Ameritech's CEI Plan*, *supra* note 150, para. 6; *BOC's Joint Petition*, *supra* note 87, para. 22; Bell Atl. Tel. Cos. Offer of Comparably Efficient Interconnection to Providers of Video Dialtone-Enhanced Servs., *Order*, 11 F.C.C.R. 985, para. 4 (1995); *Computer III Remand 1995*, *supra* note 123, paras. 9-12.

165. *Computer III Remand 1995*, *supra* note 123; *see also Computer III Further Notice 1998*, *supra* note 150; *Computer III Order 1999*, *supra* note 148, para. 4 (eliminating the requirement that BOCs receive approval of CEI plans from FCC; and permitting BOCs to simply post plans on Web sites and provide notice to FCC); *Computer III Order on Reconsideration 1999*, *supra* note 149, para. 4 (denying CIX's petition for reconsideration).

the Commission released the Broadband Notice of Proposed Rulemaking, which subsumed the *Computer III* proceeding and is currently pending.¹⁶⁶

In sum, currently under *Computer III*, CEI is an ongoing obligation where BOCs choose to provide enhanced services and the ONA plans that were filed remain binding.

4. Enforcement

The Commercial Internet eXchange (“CIX”) objected to the movement to non-structural safeguards, arguing that this created a problem with enforcement. Recognizing validity to the CIX objection, the Commission stated:

We believe that competitive ISPs will themselves monitor CEI compliance vigilantly, and will call the Commission’s attention to any failure by a BOC to follow through on its CEI responsibilities. . . . The Commission will not hesitate to use its enforcement authority, including the Accelerated Docket or revised complaint procedures, to review and adjudicate allegations that a BOC is falling short of fulfilling any of its CEI obligations.¹⁶⁷

Note, however, that this does create certain structural oddities. First, an unregulated industry, with little knowledge of the FCC, is asked to watch a regulated industry. Second, small companies are asked to watch the largest corporations in the United States. Third, ISPs are placed in a position of filing complaints against their sole supplier of a crucial facility. Fourth, contrary to normal jurisprudence, the party that lacks the information has the burden of moving (normally, all things being equal, the party with the information has the burden of moving—in this case, the burden is on the ISPs, because the information is held by the BOCs).

D. Legacy of *Computer III*

The legacy of *Computer III* was first and foremost an affirmation of the policy goals set forth in *Computer I* and *Computer II*. *Computer III* does not alter the fundamental philosophy of the Computer Inquiries. Concern for anticompetitive behavior and maintaining an open communications platform is retained. Likewise, the conceptual framework of the basic versus enhanced dichotomy that tracks the technical layers of the network is affirmed.

Computer III alters implementation by initiating new, novel, and even progressive experiments in opening up the communications bottleneck for

166. Appropriate Framework for Broadband Access to the Internet over Wireline Facilities, *Notice of Proposed Rulemaking*, 17 F.C.C.R. 3019 (2002).

167. *Computer III Order 1999*, *supra* note 148, para. 15.

the benefit of enhanced services. This marks a migration away from structural safeguards. It also signifies renewed emphasis on opening up the facilities network for the benefit of the enhanced service or computer network operating on top of the physical network. It affirms that while enhanced services remain unregulated, the Computer Inquiry policy is designed for the direct benefit of those enhanced services.

The transition from *Computer I* to *Computer II* marked a radical evolution of the conceptual framework, with implementation remaining fundamentally the same. The transition from *Computer II* to *Computer III* marked a radical evolution in the implementation, with the conceptual framework remaining the same.

V. CONCLUSION

The *Computer III* Final Order was released in 1986. The first commercial ISP was established in 1989. The Commercial Internet eXchange was set up in 1991 as the first exchange point for traffic between commercial Internet backbones (such traffic was not permitted on the NSFNET). The World Wide Web was unleashed in 1991. The White House came online in 1993 and Congress was placed online in 1994. The mid-1990s saw the explosive growth of Internet users.¹⁶⁸ In 1998, Boardwatch magazine reported, at its peak, that there were more than 7,000 ISPs in North America.¹⁶⁹

Was the success of the Internet attributable to the actions of the Commission? Did the Commission “invent the Internet?” The success of the Internet was clearly the result of the confluence of forces. For the Commission’s part, it had established the policy of the Computer Inquiries, deregulated the Customer Premise Equipment market (i.e., modems), and promoted ubiquitous and affordable flat-rate telephone lines (i.e., universal service).¹⁷⁰ All of these were necessary precursors to the success of the Internet.

There is also little new under the sun. The problem that the

168. *Cringeley*, *supra* note 14; Computer History Museum, *supra* note 14.

169. Bill McCarthy, *Introduction* to BOARDWATCH MAGAZINE’S DIRECTORY OF INTERNET SERVICE PROVIDERS 4 (12th ed., Penton Media 2000).

170. Kevin Werbach, *Digital Tornado: The Internet and Telecommunications Policy*, Office of Plans and Policy, FCC, at http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp29pdf.html (1997); Barbara Esbin, *Internet Over Cable: Defining the Future in Terms of the Past*, Office of Plans and Policy, FCC, at http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp30.pdf (1998); Jason Oxman, *The FCC and the Unregulation of the Internet*, Office of Plans and Policy, Federal Communications Commission, at http://www.fcc.gov/Bureaus/OPP/working_papers/oppwp31.pdf (1999).

Commission described itself as facing in 1966 was “convergence.” The problems were ones of substitutability, asymmetric regulation between functionally equivalent services, the restricted supply of communications services to a highly competitive enhanced services market, and the desire of the communications services dominant players who wanted to enter the highly competitive enhanced services market. The Commission faces similar issues today.

There is a tendency of regulators to automatically impose legacy regulation on new services that appear similar to, substitutes of, or threats to traditional services. The policymaker must always ask why. Why impose legacy regulation on the new service? By framing the question properly, the policymaker can gain better answers. By framing the question in terms of the layered model, that is, in terms of identifiable markets within communications industries, it helps avoid a muddled view of communications where the difference between applications and the physical network cannot be perceived. If, for example, telephony is uncoupled from the physical network and the old monopoly market, and is now provisioned in the highly competitive applications market, what implications does that have for policy?

The Computer Inquiries have been wildly successful. They followed a layered model of regulation and sought to constrain anticompetitive behavior where it occurred. The potential bottleneck in the physical network layer was identified; the competitive market and potential for growth and innovation for enhanced services was identified. A policy was created which promoted economic and technological expansion.¹⁷¹ In so doing, the Commission avoided imposing legacy common carrier regulation on new services. It created open communications platforms where innovation could occur, independent of dominant communications players.

171. In 1996, Congress declared that “[i]t is the policy of the United States—(1) to promote the continued development of the Internet and other interactive computer services and other interactive media; (2) to preserve the vibrant and competitive free market that presently exists for the Internet and other interactive computer services, unfettered by Federal or State regulation.” 47 U.S.C. § 230(b)(1)-(2) (2000).

