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May 26, 1998

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Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
1919 M Street, N.W., Room 222
Washington, D.C. 20554

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OFFICE OF THE SECRETARY

Ex Parte Presentation

Telephone Number Portability
CC Docket No. 95-116

Dear Ms. Salas:

On May 22, 1998, Douglas Brandon, Carol Peters, and Rob Jones of AT&T Wireless Services ("AT&T") and the undersigned met with Dan Phythyon, Jeanine Poltronieri, David Wye, Steve Weingarten, and Janice Jamison of the Wireless Telecommunications Bureau and Patrick Forster of the Common Carrier Bureau to discuss deferring the local number portability obligations of wireless carriers until September 30, 2000. The specific points we raised are reflected in the attached memo and timeline, which were provided to the Commission participants at the meeting.

Pursuant to sections 1.1206(b)(1) and (b)(2) of the Commission's rules, an original and one copy of this letter and attachment are being filed with the Office of the Secretary. Copies of the letter and the attachment are also being served on the Commission personnel in the meeting.

Sincerely,

Howard J. Symons

cc: Dan Phythyon
Jeanine Poltronieri
David Wye
Steve Weingarten
Janice Jamison
Patrick Forster

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I. Introduction

This document sets forth the milestones for fulfilling the requirement to port wireless numbers. Under the current mandate, providers of commercial mobile radio service (CMRS) providers ("Wireless Service Providers") carriers must be able to provide Service Provider Portability by June 30, 1999. Based on industry efforts to date and the study set forth in this document, it is clear that this deadline will not provide wireless service providers with sufficient time to complete all necessary tasks to meet this requirement. For example, the wireless industry's number portability solution will require the implementation of a second identification number for each mobile phone in order to efficiently port a wireless number and provide the same level of service and roaming available today. These problems are unique to the wireless industry's implementation of LNP. Moreover, portability with the ability to support nationwide roaming will not occur unless and until all wireless carriers concurrently implement the necessary changes to their networks and business systems.

As demonstrated below, AT&T Wireless believes that the implementation of wireless number portability will require an additional 15 months – until September 30, 2000 – in order for the industry to address these and all other complex issues.

This document does not address the FCC mandate for wireless providers to route calls to ported wireline numbers by December 31, 1998. AT&T Wireless is progressing toward meeting that milestone.

II. LNP Impact on Wireless Service Providers

The following list enumerates the impact of Local Number Portability (LNP) to wireless service providers, as compared to wireline service providers; thus, substantiating the incentive to request additional time to implement LNP in the wireless community.

1. To support LNP, both wireline and wireless carriers must implement the necessary functionality (i.e., deploy and query a number portability database within one's own network) or obtain the means to route calls via the Location Routing Number (LRN) method. All wireline and wireless carriers must also implement the necessary enhancements to Operations, Administration, Maintenance, and Provisioning (OAM&P) systems and processes. OAM&P systems and processes are tools used by operations personnel to efficiently manage and maintain a telecommunications network. Required enhancements to OAM&P include adding the capability in the switch to determine whether the dialed number has been ported (and that additional routing data may be required) and to receive downloads from the Number Portability Administration Service Management System (NPAC-SMS) into a number portability database. The dialed NPA-NXX is provided to the switch, which determines whether the number has been ported by querying a database of ported numbers to obtain the LRN. This database is populated from the NPAC-SMS.

2. Unlike wireline carriers, wireless providers must also alter the fundamental model by which wireless services are delivered to subscribers with ported numbers. Specifically, to preserve existing wireless registration and roaming record reconciliation processing (essential to the wireless call processing paradigm) for both ported and non-ported

subscribers, wireless carriers (in particular, TDMA and CDMA providers) must move from a single Mobile Identification Number (MIN) to multiple identifiers. Today, the MIN serves as both the telephone number and the mobile station identifier; but to support LNP, the MIN must be split into

- a Mobile Directory Number (MDN) that will serve as the telephone number; and
- a Mobile Station Identifier (MSID) that will identify the physical mobile station.

3. The MSID could be in the format of either a 15-digit International Mobile Station Identifier (IMSI) or 10-digit MIN. The MSID will be of a format that through limited digit translation easily identifies the subscriber's service provider.

4. The MDN will be the portable telephone number. The MSID (MIN or IMSI) will be programmed into the mobile station. A porting subscriber will bring the MDN to the recipient network and leave the MSID behind in the donor network (which can be used as an MSID for another subscriber). The recipient network will provide the porting subscriber with a new MSID during subscriber activation.

5. A subscriber who has activated prior to Number Portability will have only a MIN. After the implementation of LNP, if the subscriber does not port, the subscriber will have an MDN equal to the MSID equal to today's MIN. If the subscriber ports, the subscriber will bring today's MIN value as the MDN into the recipient network and will leave today's MIN value as an MSID in the donor network.

6. During registration (e.g., powering on a mobile station), the mobile station will supply the MSID via the air interface to the Serving Mobile Switching Center (MSC). Within this registration process, the home network will supply the MDN to the Serving MSC for storage in its Visitor Location Register (VLR). The MDN can then be used for future call delivery.

7. Because the LNP order mandates the continuance of nationwide roaming, nearly all wireless service providers must upgrade their networks to recognize the separation of the MDN from the MSID. Specifically, upgrades will be required for any service provider with existing roaming agreements whether that provider is within or outside the top 100 Metropolitan Statistical Areas (MSA) designated for LNP. If a ported subscriber attempts to register on a Serving MSC that does not support the separation, the Serving MSC will not recognize the subscriber's MDN; the Serving MSC will only recognize the number provided via the air interface – the MSID.

8. The impact on wireless providers in moving from one to multiple identifiers are as follows:

   - The Telecommunications Industry Association (TIA) Interim Standard (IS) 41 standards committee must investigate each and every ANSI-41 protocol message to determine whether the MSID, the MDN, or both should be included in the message. ANSI-41 protocol messages are used by TDMA, CDMA, and AMPS providers to move call data and subscriber data between switching elements and

telecommunications database (e.g., the Home Location Register, which contains location and call permission information about a subscriber).

- Wireless providers that plan on porting subscribers must upgrade all switching elements and databases and test all call scenarios for subscribers with MSIDs of a different value than the MDN, per the above standards and in proprietary service implementations.

- Wireless providers that do not plan on porting subscribers but currently participate in roaming agreements must upgrade a subset of the network to recognizing roaming subscribers with a MSID of a different value than the MDN.

- The wireless industry must establish a new process for administering MSIDs separate from the North American Numbering Plan (NANP) administration.

- All wireless providers must make the necessary modifications to adapt to the process of obtaining MDNs from the NANPA, MSIDs via a separate administrative body, and managing both pools of numbers.

- Each carrier must enhance number inventory systems and procedures to assign and manage efficiently MSIDs as separate from MDNs.

- Each carrier must modify all business systems to support both the MDN and MSID.

9. In addition to the MIN/MDN separation, wireless service providers must also implement the support process necessary to move ported numbers between carriers (e.g., the Service Order Activation communication with the NPAC-SMS, the LSR process). However, because wireless carriers activation processes differ from that of wireline, the established processes must be revised in the industry forums. For example, when provisioning for a mobile subscriber, no line-side provisioning is necessary. Technology allows for the wireless provider to activate a mobile station via the air interface. This technology allows wireless providers to activate subscribers in minutes.

III. Supporting Timeline for WNP Phase II

Attachment #1 provides a timeline of the implementation of the network and business system functionality necessary to support the porting of wireless numbers. This timeline illustrates that with the current industry progression, the best possible quality launch date is September 30, 2000. Please note that there exist three industry milestones that, if not met per the dates on the timeline, will delay this proposed schedule:

- "ANSI-41 standards available for support of MIN/MDN separation (part I)"
- "Inter-Carrier Porting Communications defined"
- "MIN Assignments Procedures established"

The list below details each timeline point.

- FCC Order (July, 1996)
  ⇒ The FCC issued its *First Order and Report and Further Notice on Proposed Rulemaking* mandating Local Number Portability on Commercial Mobile Radio Service (CMRS) providers on July 2, 1996.

- CTIA Issue RFI (August, 1996)
  ⇒ The Cellular Telecommunications Industry Association (CTIA) issued a Request for Information (RFI) to the wireless industry (service providers and vendors, alike) seeking solution proposals for achieving LNP in the wireless networks while continuing to support nationwide roaming.

- CTIA Open Forum (October, 1996)
  ⇒ CTIA held an Open forum to discuss the RFI responses. The wireless industry came to a consensus on the solution as described in the first portion of this document.

- SRD to Standards (January, 1997)
  ⇒ The CTIA Number Advisory Group (NAG) created a sub-task group for the purpose of documenting the Wireless Number Portability (WNP) solution. The group first created a Service Requirements Document (SRD) to aid the standards bodies in starting to research WNP impacts to wireless protocols.

- CTIA Report Issued on WNP Solution (April, 1997)
  ⇒ The CTIA Number Advisory Group (NAG) LNP sub-task group expanded the SRD to describe the WNP solution, in whole, including business system impacts. The CTIA released *The CTIA Report on Wireless Number Portability* on April 11, 1997. The sub-task group continues to meet to update the document with elements learned as LNP progresses.

- On-going Wireless Committees and Forums on WNP
  ⇒ Once the wireless solution was documented, Subject Matter Expert (SME) workshops were created to work in detail areas of WNP, including Inter-carrier Porting Communications, Call Detail Recording, Short Message Service, and NPA-NXX Based Service impacts. The CTIA NAG undertook the development of the MIN Administration Guidelines. Additionally, wireless carriers have joined the existing LNP forums including the North American Numbering Council (NANC) working groups. The Wireless/Wireline Integration Task Force (WWITF) was formed to work issues where the wireless industry and the wireline industry interact. Forums continue to spawn as necessary to resolve issues and concerns toward the goal of implementing LNP for wireless.

- ANSI-41 standards available for support of query capabilities (February 1998)
  ⇒ TR45.2 issued its first standard for LNP in February 1998 – the ANSI-41 protocol message to query a Number Portability database in the wireless network and retrieve an LRN for properly routing calls to ported numbers. Each protocol (AIN, IN, ANSI-41, and U.S. GSM) has developed a new message for obtaining ported routing information from a number portability database.

- ANSI-41 standards available for support of MIN/MDN Separation (part I) (2Q98)

⇒ With the completion if the query standard, the TR45.2 LNP Working Group is prepared to research and report the necessary modifications in the ANSI-41 protocol and procedures in support of MIN/MDN Separation. This milestone is in the critical path of the proposed launch date.

- ANSI-41 standards available for support of MIN/MDN Separation (part II) (4Q98)
  ⇒ This standards work is scheduled to pick up additional LNP impacts to ANSI-41 not in the critical path (e.g., Mobile-to-mobile Short Message Service support for ported numbers, Automatic Code Gapping).

- Inter-Carrier Porting Communications Defined (3Q98)
  ⇒ Wireless service providers must agree on process to facilitate inter-carrier communications. This includes the method of communication, the information exchanged, and the intervals for exchanging the data. The wireline industry developed inter-carrier communications processes without input from the wireless industry. Those process meet some, but not all needs of the wireless carriers for effective and efficient communications. The wireless carriers have developed a set of recommendations to streamline the wireline defined inter-carrier communications process and shorten porting intervals to meet the business needs of wireless providers. The recommendations have been submitted to the LNPA Wireline Wireless Integration Task Force, and the LNPA Technical and Operations Task Force for review. The wireless carriers have agreed to adopt most of the wireline processes to enable the industry to launch wireless number portability, but have asked for changes to the process to insure the inter-carrier communications methods and procedures can meet the projected future demand for porting telephone numbers. This milestone is in the critical path of the proposed launch date.

- MIN Assignment Procedures Defined (4Q98)
  ⇒ The wireless industry must develop guidelines and procedures for assigning blocks of Mobile Station Identification (MSID) numbers to carriers. These guidelines will drive the development and implementation of systems and procedures for billing, inter-carrier roaming services settlement, and more. This milestone is in the critical path of the proposed launch date.

- Settlement Standards for Inter-Carrier Roaming Defined (2Q99)
  ⇒ Wireless carriers must agree on standards for settlement to support inter-carrier roaming services. Currently wireless carriers use the first six digits of the Mobile Directory Number (MDN) to determine the carrier responsible for settlement. When the MDN becomes portable this relationship will break, and wireless carriers need to utilize other information to support this need. Wireless carriers are planning to utilize the new Mobile Station Identification (MSID) number to relate the subscriber to the carrier. The CIBER industry group has defined standards for exchanging records between carriers to support number portability. The wireless industry must agree on standards for MIN assignment. This milestone is in the critical path of the proposed launch date.

- Network Design, Development, Implementation, and Integration (30 months ending 4Q99)
  - ⇒ This effort began with the issuance in mid-April 1997 of *The CTIA Report on Wireless Number Portability*, establishing the wireless industry's LNP solution. Wireless service providers must upgrade each element in the network to support the MIN/MDN separation and the ANSI-41 protocol modifications identified by standards. Vendors must design and develop, and providers must bring the new software in the laboratory, test, and integrate the new nodes into a single network. Furthermore, wireless carriers must integrate these nodes with the Business Support Systems before deployment. From start to finish, this work typically takes 24 months to complete. As WNP touches every node in the network, this milestone will take wireless carriers an estimated 30 months. During these 30 months, for instance, the industry must develop and deploy the functionality to launch the query and route to ported numbers as well as the functionality to port wireless numbers.

- Design Changes to Billing and Customer Systems (6 –12 months - 1Q99)
  - ⇒ Billing and Customer Systems support billing, customer care, customer acquisition, service order fulfillment and network provisioning. The process of analyzing and designing necessary system changes cannot conclude until the wireless and wireline industry agree to standards for inter-carrier communication. This includes activities necessary to coordinate the port of a subscriber from one service provider to another service provider. To successfully develop business process, the following standards must be defined:
    - Inter-carrier communications
    - MSID block assignment
    - MDN / MSID mapping
    - MDN portable areas

- Changes to Customer Systems Implemented (code and test) (5-7 months - 3Q99)
  - ⇒ Wireless carriers must implement enhancements to their internal customer systems to support acquiring and caring for their customers in a number portability environment. For example, wireless carriers must modify systems to support new procedures for activating a subscriber with a ported telephone number and changing a subscriber's telephone number.
  - ⇒ Customer systems also require substantial modifications to split the MSID and MDN apart, and to support the new number portability business processes. These processes include porting-in new subscribers from other carriers and porting-out existing subscribers to other carriers. In many cases, customer systems interface with the wireless network to provide service to the ported subscribers. These interfaces will require modification to insure carriers can activate and route calls to ported and non-ported subscribers properly.

- Changes to Network Provisioning Systems Implemented (5-7 months - 2Q99)
  - ⇒ The network provisioning systems form the link between the customer systems and the wireless network. The provisioning systems are responsible for translating the customer service orders to provision wireless network elements (e.g., Home Location Register, Voicemail, Short Message Service centers, etc.)

⇒ Wireless carriers must modify many network elements and their corresponding interfaces to support the MIN/MDN split, and implement new interfaces to the NPAC SOA/LSMS systems for number portability. To successfully implement the changes to the network provisioning systems the following standards must be defined:
- MSID Block Assignment
- MDN / MSID Mapping
- MDN Portable Areas

- Changes to Billing Systems Implemented (8-10 months - 3Q99)
  ⇒ Wireless carriers must implement significant changes to their billing systems to support number portability.
  ⇒ Wireless billing systems rely on the first six digits of the mobile directory numbers to play a key role in the logic used to bill subscribers. An abbreviated list of the logic driven by the first six digits can include:
    - Home vs. Roamer Identification
    - System Identification (SID) and Billing Identification (BID) lookups
    - Special System Features (e.g. Calling Party Pays, Pre-Paid Services)
    - Telephone Number Management
    - Airtime Rating
    - Local Calling Area assignment for Toll Point Identification
    - Reporting
  ⇒ Wireless billing systems must be modified to utilize the MSID to play the role of the MDN in many of the cases identified in the above. The complexity of shifting this logic requires many standards to be defined in advance including:
    - MSID Block Assignment (e.g. modifications to telephone number management systems to support assignment of MSID to subscribers).
    - MDN / MSID Mapping (e.g. modifications to billing system to support guiding and association of call records to subscribers by MSID).
    - Inter-Carrier Roaming Services Settlement (e.g. modifications to settlement systems to support the use of MSID rather than MDN to determine home system).

- Billing and Customer Systems Integration Testing (4-6 months - 4Q99)
  ⇒ This activity requires service providers to perform internal and external integration testing, including the possibility of coordinating and executing a wireless field trail involving several service providers. It is necessary to execute thorough system integration tests to insure the integrity of system functions is maintained after number portability changes have been made. The carriers must insure their systems continue to provide quality care, and accurate billing to their customers to insure customer service is not degraded by the implementation of number portability features.

- Inter-Carrier Trial (4-6 months – 1/2Q00)
  ⇒ Wireless carriers must execute thorough Inter-Carrier Integration Testing to insure Wireless Number Portability service can be offered to business and consumers effectively. The carriers must confirm their processes are satisfactory for porting subscribers from carrier to carrier in reasonable timeframes to insure wireless

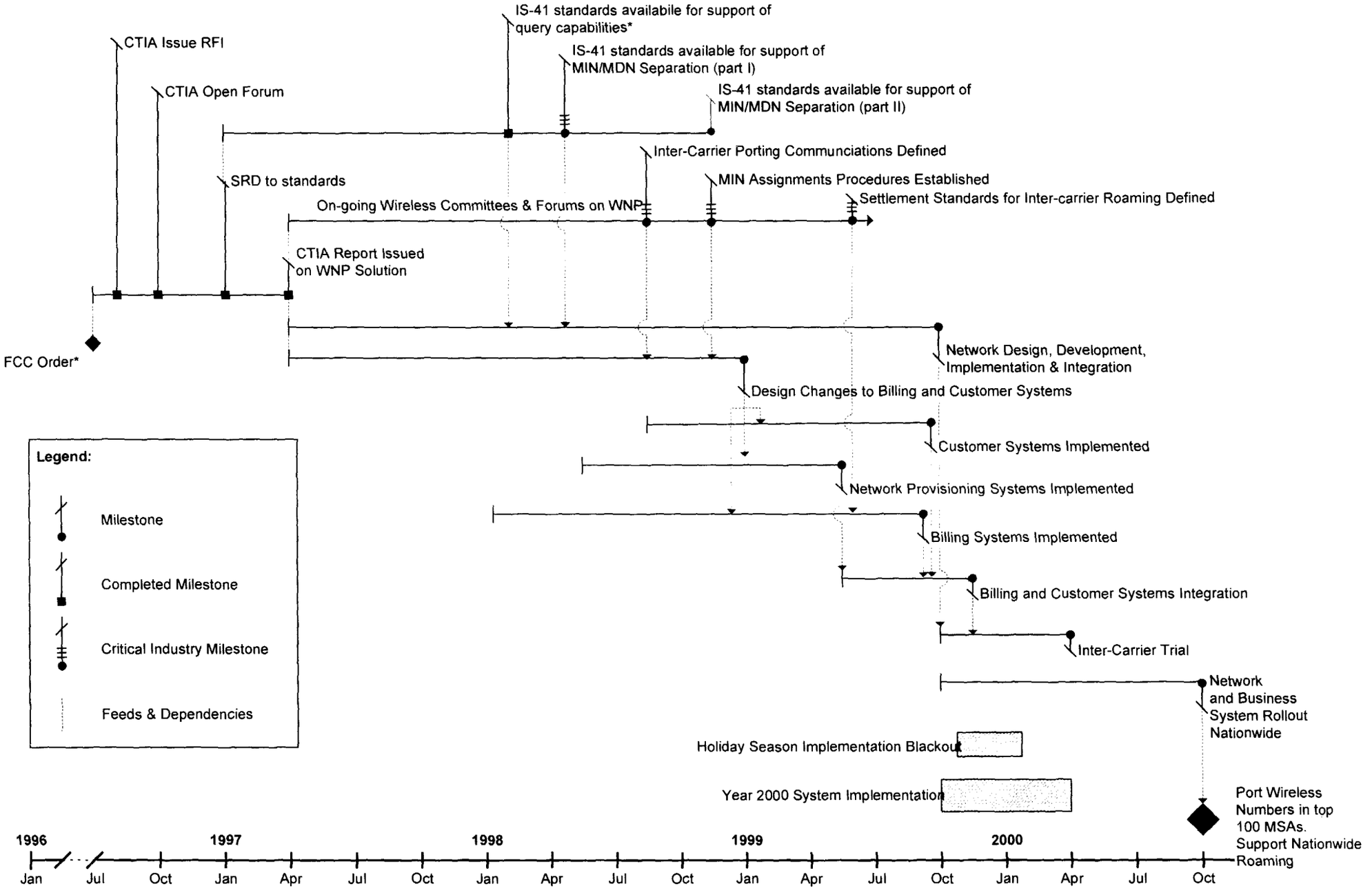
customers do not incur unreasonable delays when they request to port their telephone numbers.

⇒ Activities cannot be performed during the *Holiday Season Implementation Blackout* period (see below).

- Year 2000 Systems Issues (3-6 months - 4Q99/1Q00)
  ⇒ Wireless carriers must certify and implement Y2000 compliant systems. This activity will keep wireless carriers from focusing key systems development resources on the number portability implementation. The Wireless number portability implementation deadlines should take this time into consideration.

- Holiday Season Implementation Blackout Period (3-4 months - 4Q99/1Q00)
  ⇒ Wireless carriers business operations are busiest during the months of October (2nd half) through January each year during the holiday buying season. To insure wireless business operations are capable of high performance and reliability, many carriers self-impose constraints on implementing new features into their business systems during this period to insure their systems can sustain the huge volumes of activity required to support the activation of new subscribers in their business systems and networks during this period.

- Network and Business System Rollout Nationwide (6-12 months - 3Q00)
  ⇒ Wireless carriers must rollout the new systems to developed to support number portability. The extensive impact of number portability features on the existing systems require the carriers to take extra precaution to insure their subscribers continue to receive high quality service during the implementation of number portability. This rollout encompasses upgrading all billing systems, customer systems and all network nodes. LNP cannot be turned on until all systems in the nation are upgraded in order to preserve nationwide roaming.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Completed Milestone
Critical Industry Milestone
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