

**REDACTED—FOR PUBLIC INSPECTION**

October 27, 2014

**Ex Parte**

Ms. Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12th Street, NW  
Washington, DC 20554

Re: *Telephone Number Portability, et al.*, CC Docket No. 95-116, WC Docket Nos. 07-149 & 09-109

Dear Ms. Dortch:

On behalf of Telcordia Technologies, Inc., d/b/a iconectiv (“Telcordia”), I write to refute Neustar’s baseless assertion that Telcordia will implement a stripped down NPAC,<sup>1</sup> to correct certain factual misstatements in Neustar’s letter of September 23,<sup>2</sup> and to respond to Neustar’s mischaracterizations of the Georgetown University Security and Software Engineering Research Center (“S<sup>2</sup>ERC”) analysis<sup>3</sup> of anticipated Local Number Portability Administrator (“LNPA”) transition costs. Specifically:

- Telcordia will provide an NPAC that provides all the functionalities of the existing NPAC, as well as the enhancements that Telcordia proposed in its offer, not a stripped down NPAC. Telcordia’s bid contemplates such a fully featured NPAC, and both the telecommunications industry and law enforcement constituents will require no less. Of course, where Telcordia can offer better service than Neustar has done, it will do so.

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<sup>1</sup> Letter from Aaron Panner, Counsel to Neustar, Inc. to Marlene H. Dortch, Secretary, FCC at 1, CC Docket No. 95-116, WC Docket No. 09-109 (filed Oct. 16, 2014) (“Neustar Oct. 16, 2014 Letter”).

<sup>2</sup> Letter from Aaron Panner, Counsel to Neustar, Inc., to Marlene H. Dortch, Secretary, FCC, CC Docket No. 95-116, WC Docket No. 09-109 (filed Sept. 23, 2014) (“Neustar Sept. 23, 2014 Letter”).

<sup>3</sup> Eric Burger, *Issues and Analysis of a Provider Transition for the NPAC*, S<sup>2</sup>ERC Technical Report (July 22, 2014) (attached as Exhibit B to Reply Comments of Telcordia Technologies, Inc., CC Docket No. 95-116, WC Docket No. 09-109 (filed Aug. 22, 2014) (“Telcordia Reply Comments”) (“S<sup>2</sup>ERC Report”).

- In its September 23 letter, Neustar incorrectly claims that a number of statements in Telcordia's reply comments contradict or attempt to modify its RFP response when it stated it was developing new code for the U.S. NPAC and when it said it would not store Enhanced Law Enforcement Platform ("ELEP") queries. These arguments are meritless. The statements identified by Neustar do not in any way contradict Telcordia's bid, nor is Telcordia attempting to modify its submission after the fact. The Future of Number Portability Administration Center ("FoNPAC") subcommittee of the North American Portability Management, LLC ("NAPM") was fully aware that Telcordia was developing new code and was not relying on code from its foreign services. Moreover, Telcordia never said that it would store ELEP queries. The requirement to store certain information for interactive voice response ("IVR") portal queries which Neustar cites is not a specification for ELEP and is an RFP requirement for any LNPA, whether Telcordia or Neustar.
- With respect to the S<sup>2</sup>ERC report, that report never concluded that a transition from one LNPA to another would cost every carrier \$250,000 to \$1.5 million. To the contrary, those estimates focused only on the limited number of larger carriers that would initiate substantial IT projects; the vast majority of carriers—those that connect with the Number Portability Administration Clearinghouse ("NPAC") through service bureaus or the web-based GUI interface -- would incur no such costs. Indeed, Dr. Singer's further statement reveals that his estimates of first-year and out-year transition costs were based on unsubstantiated and unjustified assumptions.<sup>4</sup> Dr. Singer's "analysis" therefore provides absolutely no basis for concluding that the FoNPAC was wrong when it determined that Telcordia's lower bid outweighed likely transition costs.
  - Telcordia was the low bidder by a significant amount. The NANC, its Selection Working Group and the industry's FoNPAC subcommittee all concluded that Telcordia and Neustar both "met the technical qualifications and are equally capable of serving as the LNPA."<sup>5</sup> It is time to move ahead to select Telcordia, the qualified low-bidder, as the next LNPA.

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<sup>4</sup> Telcordia has already addressed the remaining arguments in Neustar's September 23 and October 16 letters and thus will not repeat them here. *See, e.g.*, Ex Parte Response of Telcordia Technologies, Inc., d/b/a iconectiv to Neustar Reply Comments, WC Docket No. 09-109 and CC Docket No. 95-116 (filed Sept. 24, 2014); Telcordia Reply Comments; Letter from John T. Nakahata, Counsel to Telcordia Technologies, Inc., to Marlene Dortch, Secretary, FCC, CC Docket No. 95-116, WC Docket Nos. 07-149 & 09-109 (filed April 28, 2014); Opposition of Telcordia Technologies, Inc. d/b/a iconectiv to Neustar's Petition for a Declaratory Ruling, CC Docket No. 95-116, WC Docket Nos. 07-149 & 09-109 (filed Feb. 24, 2014) ("Telcordia Feb. 24, 2014 Opposition"). Neustar's arguments remain meritless, notwithstanding Neustar's constant repetition.

<sup>5</sup> Reply Comments of the NAPM LLC at 3 WC Docket No. 09-109 and CC Docket No. 95-116 (filed Aug. 22, 2014).

**I. TELCORDIA WILL IMPLEMENT A FULLY FUNCTIONAL NPAC WITH ENHANCED, NOT DIMINISHED, FEATURES.**

Neustar’s October 16 ex parte asserts that Telcordia will only provide “a less capable and less reliable NPAC, stripped of services that NPAC users rely on today.”<sup>6</sup> This assertion is false. Telcordia priced its bid based on its understanding that it will need to replicate all of the functionalities of the existing NPAC, as well as its recognition that it will have to implement future changes, such as the IP transition, and the service improvements it promised. Telcordia has committed to provide all of the functionality of the current NPAC—including ELEP—and there will be no “significant gaps” in service or functionality as suggested by Neustar.<sup>7</sup>

With regard to the specific features that Neustar has previously mentioned (mass update/mass port, disaster recovery/emergency preparedness, and ecosystem monitoring), Telcordia’s bid documents indicate that it will provide those features just as the current NPAC does. For mass updates and ports, the bid documents required providers to support these features, and, as indicated previously, Telcordia indicated that it would support this requirement.<sup>8</sup> Telcordia is well aware that it will have to support large-scale mass ports within a compressed time frame. Accordingly, Neustar is plainly wrong to suggest that any service providers will somehow lose the ability to use this functionality.

As for ecosystem monitoring, Telcordia is well aware of the importance of such monitoring and therefore included **\*\*BEGIN HIGHLY CONFIDENTIAL\*\*** [REDACTED]

[REDACTED] **\*\*END HIGHLY CONFIDENTIAL\*\***<sup>9</sup>

<sup>6</sup> Neustar Oct. 16, 2014 Letter at 1.

<sup>7</sup> To the extent that Neustar has developed undisclosed ancillary services, Telcordia has no way to know what those are and neither Neustar nor any other party (presumably the people who used these services) proposed that they be included in the TRD or RFP, which was supposed to outline the significant features of the NPAC. In any event, the Commission should not allow Neustar to hide features and then use those features as a trump card to prevent award of the bid to a competitor.

<sup>8</sup> *E.g.* NAPM, LLC 2015 LNPA TRD Question 3.2 (“TRD”), *available at* [http://www.napmlc.org/Docs/npac/ref\\_docs/2015%20LNPA%20Technical%20Requirements%20Document%202013.docx](http://www.napmlc.org/Docs/npac/ref_docs/2015%20LNPA%20Technical%20Requirements%20Document%202013.docx) (last accessed Oct. 24, 2014); *see also* NAPM, LLC, 2015 LNPA RFP § 6.2 (Reqs. 2, 3) (“RFP”), *available at* [http://www.napmlc.org/Docs/npac/ref\\_docs/2015%20LNPA%20RFP%202013.docx](http://www.napmlc.org/Docs/npac/ref_docs/2015%20LNPA%20RFP%202013.docx) (last accessed Oct. 24, 2014) (requiring the LNPA to provide user support for mass changes); *id.* Question 10.1 (requiring the LNPA to provide NPAC User Methods and Procedures for mass modifications);

<sup>9</sup> Telcordia Bid, TRD, Attachment to Question 12.1 § 4.2.3 (Telcordia08091); *see also id.* § 7.1 (Monitoring) (Telcordia08108-08109); *id.* § 7.2 (**\*\*BEGIN HIGHLY**

And regarding disaster recovery and emergency preparedness, as Telcordia has previously explained, “the RFP required bidders to submit significant information regarding disaster recovery and emergency preparedness on the NPAC system that extended to working with the carriers. The RFP required bidders to provide methods and procedures and functionality to support mass modifications, which can be used to support disasters and emergencies in service provider networks.”<sup>10</sup> As indicated in its bid, Telcordia will gladly work with carriers and government officials to help restore connectivity in the event of an emergency.

## II. TELCORDIA’S REPLY COMMENTS ARE CONSISTENT WITH ITS BID.

### A. Telcordia Will Not Reuse Foreign Code and Has Never Said Otherwise.

In its letter, Neustar first contends that Telcordia has contradicted its bid by stating that Telcordia is creating the code for the NPAC from scratch, in the United States, not reusing code that has been deployed in other countries. Neustar baldly claims—without a single citation—that this statement represents a “change” and states that Telcordia has “belatedly recognized its mistake in using the same code it employs in foreign countries.”<sup>11</sup> This is absolutely false. Telcordia has never proposed to reuse code from foreign operations and has always planned to write its code from scratch; Neustar has not cited any example to the contrary.

Neustar also suggests that the NAPM would be surprised to learn that Telcordia is writing its code from scratch and that this fact might cause NAPM and the NANC to change their recommendations. This argument is equally meritless because NAPM was aware that Telcordia intended to create unique code for the U.S. NPAC. In its meeting with the NAPM, Telcordia explicitly told NAPM that it would **\*\*BEGIN HIGHLY CONFIDENTIAL\*\*** [REDACTED] **\*\*END HIGHLY CONFIDENTIAL\*\*** Counsel for NAPM confirmed that NAPM understood this fact, by stating that Telcordia was **\*\*BEGIN HIGHLY CONFIDENTIAL\*\*** [REDACTED] **\*\*END HIGHLY CONFIDENTIAL\*\*** Although Neustar has subsequently attempted to

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**CONFIDENTIAL\*\*** [REDACTED] **\*\*END HIGHLY CONFIDENTIAL\*\***) (Telcordia08109-08110); *id.* § 7.4.1 (monitoring dashboard) (Telcordia08111); Telcordia Bid, RFP, Attachment to Question 12.3 at 37 (Potential Risk 13) (Telcordia00172).

<sup>10</sup> Telcordia Feb. 24, 2014 Opposition at 5 (explaining that RFP required all bidders to guarantee that they could provide disaster recovery and emergency services) (citing VQS, § 3.6.14; RFP §§ 6.4, 10.1; TRD § 2.1, 10.1).

<sup>11</sup> Neustar Sept. 23, 2014 Letter at 7.

<sup>12</sup> LNPA Procurement Presentation Q & A in Denver, Colorado: Telcordia Technologies, Inc., Transcript at 170:14.

<sup>13</sup> *Id.* at 169:21-22.

confuse the issue by incorrectly telling the media that Telcordia would reuse foreign code,<sup>14</sup> the record is clear that Telcordia never made such a statement and that NAPM understood Telcordia's proposal.

It is also ironic that Neustar would now argue that Telcordia's plans to create new code rather than to reuse code somehow creates a security issue. Neustar initially claimed the opposite when it told the Washington Post that the reuse of code from existing implementations created an unacceptable "security risk."<sup>15</sup> But now that Neustar has been forced to admit that Telcordia does *not* plan to reuse code, it claims that the *failure* to reuse code from existing implementations "raises new security and reliability issues."<sup>16</sup> This is disingenuous, and demonstrates that Neustar is trying to ensnare any would-be competitor in a Catch 22. Neustar cannot have it both ways, and the Commission should see its arguments for what they are—an attempt to prevent or delay competition.

**B. Telcordia Will Not Store ELEP Inquiries, Nor Did Its Bid Suggest Otherwise.**

Neustar further claims that Telcordia contradicted its RFP response by stating that it has no plans to store a record of the telephone numbers queried through the Enhanced Law Enforcement Platform ("ELEP"). Once again, this is incorrect. In so arguing, Neustar misleadingly conflates the RFP requirements pertaining to a general-use Interactive Voice Response ("IVR") portal with ELEP, a secure law enforcement access portal, in a vain attempt to paint Telcordia as lax on security requirements.

The RFP required each bidder to verify that it would provide an IVR that could be accessed by authorized service providers, law enforcement agencies, and PSAPs.<sup>17</sup> The RFP specifically requires the IVR to be able to track calls for billing purposes: "Each call made to the NPAC/SMS IVR system must be tracked from start to finish. For every call, the NPAC/SMS IVR system must capture: the PIN making the call, the menu options selected, the telephone numbers inquired about, the results of the inquiry(ies), and the length of the call."<sup>18</sup> In response to RFP Question 6.9, each bidder—including Neustar—was required to agree to comply with

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<sup>14</sup> Ellen Nakashima, *Neustar, Telcordia Battle Over FCC Contract to Play Traffic Cop for Phone Calls, Texts*, Wash. Post (Aug. 9, 2014), [http://www.washingtonpost.com/world/national-security/neustar-telcordia-battle-over-fcc-contract-to-play-traffic-cop-for-phone-calls-texts/2014/08/09/778edea-1e7b-11e4-ae54-0cfe1f974f8a\\_story.html](http://www.washingtonpost.com/world/national-security/neustar-telcordia-battle-over-fcc-contract-to-play-traffic-cop-for-phone-calls-texts/2014/08/09/778edea-1e7b-11e4-ae54-0cfe1f974f8a_story.html) (last accessed Oct. 24, 2014).

<sup>15</sup> *Id.*

<sup>16</sup> Neustar September 23, 2014 Letter at 7.

<sup>17</sup> RFP § 6.9; *see also* Telcordia Bid, RFP Attachment to Question 15.1 at 28-29 (Telcordia00264-Telcordia00265); Telcordia Bid, TRD Attachment to Question 12.1 at 34 (Telcorda08112).

<sup>18</sup> RFP § 6.9 REQ 10.

this requirement, and Telcordia stated that its IVR system “will be able to record” that information.<sup>19</sup>

The IVR is not the same as the ELEP, which is a secure law enforcement platform. Telcordia will not track, monitor, or maintain records of law enforcement queries. Telcordia’s position has not changed on this matter. Moreover, its agreement—in response to RFP requirements—to track IVR access for billing purposes does not affect Telcordia’s commitment to guarding law enforcement and individual confidentiality. Neustar attempts to manufacture contradictions where none exist.

### **III. NEUSTAR’S ESTIMATES OF TRANSITION COSTS ARE BASELESS AND INFLATED.**

The S<sup>2</sup>ERC study deflated Neustar’s claims that migrating the NPAC database from Neustar to another LNPA would entail risks similar to those experienced by United Airlines and Continental when they attempted to merge their airline computerized reservation systems or the implementation of healthcare.gov. The S<sup>2</sup>ERC study showed that, unlike those two notorious examples, the NPAC database is a highly specified system, which includes specified features, functionality, external interface business rules, database schema, and data dictionary.<sup>20</sup> Thus, the transition risks and potential costs are significantly lower than in those two examples.

In a futile effort to defend its exaggerated and counterfactual estimates of transition costs, Neustar submitted a follow-up report by its consultant, Dr. Hal Singer,<sup>21</sup> which grossly distorts the findings of the S<sup>2</sup>ERC study. Dr. Singer incorrectly claims that the S<sup>2</sup>ERC study validated his estimate of the costs that carriers would incur to test the new NPAC. But the S<sup>2</sup>ERC study did no such thing. As Dr. Burger explains in his attached analysis of Dr. Singer’s follow-up report, the S<sup>2</sup>ERC study estimates that the industry would spend between \$21 million and \$48 million to test the new NPAC—a far cry from the \$160 million that Dr. Singer attributes to the study. The portion of the S<sup>2</sup>ERC study that discussed \$160 million as an upper bound simply used the Standish Group calculation without validating it, and then subsequently developed an alternative, and much lower, estimate.<sup>22</sup> Nor is it true, as Neustar claims, that the S<sup>2</sup>ERC study suggested that each and every carrier would spend \$250,000 to \$1.5 million on pre-transition testing and preparation. On the contrary, the S<sup>2</sup>ERC study found, based on the industry plan for the implementation of local number pooling, that “the per-carrier cost would top out at a little under \$600,000” for the larger carriers that would implement an enterprise IT project. Notably, however, these costs would be incurred only by the small number of carriers that would need to test the transition through enterprise IT projects—which was 36 in the case of the NPAC

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<sup>19</sup> Telcordia Bid, TRD Attachment to Question 12.1 at 34 (Telcorda08112).

<sup>20</sup> S<sup>2</sup>ERC Report at 8.

<sup>21</sup> Hal J. Singer, Economists Incorporated, *Analysis of Technical Report by Professor Burger* (attached to Neustar Sept. 23, 2014 Letter) (“Singer Analysis”).

<sup>22</sup> *Compare* S<sup>2</sup>ERC Report at 11 *with id.* at 1, 5.

Number Pooling release and which Standish assumed would be 80. The thousands of smaller carriers would likely incur little to no additional costs from the transition.

Nor did the S<sup>2</sup>ERC validate Dr. Singer's methodology, as he claims.<sup>23</sup> What little Dr. Singer has disclosed demonstrates that these "results" are completely unfounded. Approximately 62 percent of the costs in Dr. Singer's estimate relate to "transaction processing," a category that he describes as the "error rates above current baseline due to lack of experience or expertise handling transactions that require customer coordination."<sup>24</sup> To arrive at his estimate for these costs, Dr. Singer simply assumed that Telcordia would make more mistakes than Neustar and then simply assumed an error rate based solely on what Neustar claimed that error rate should be. But Dr. Singer provides no basis for either the assumption that Telcordia would make more mistakes or for the magnitude of his assumed error rate.<sup>25</sup> Moreover, given Telcordia's experience in many different number-portability regimes, there is no justification for assuming that Telcordia's error rate would be higher. On the contrary, as Dr. Burger points out in his follow-up report, it may be that Telcordia, as an experienced vendor, would have a *lower* error rate, saving the industry millions of dollars.<sup>26</sup>

Another 25 percent of Dr. Singer's cost estimate relates to "systems transition," defined as supposed "errors introduced during transition when NPAC records are propagated to the carriers,"<sup>27</sup> including "the misinterpretation of database fields and database structure by software or personnel."<sup>28</sup> To arrive at the costs in this category, Dr. Singer "assumed a .25 percent error rate when interpreting database fields," of which 19 percent are customer-affecting<sup>29</sup>—numbers he apparently pulled out of thin air. In his original report, Dr. Singer purported to justify the .25 percent assumption because it was "similar to those indicated by Alcatel and Lucent in their recent study,"<sup>30</sup> but after Dr. Burger pointed out that the study referenced by Dr. Singer involved errors *latent in a database* rather than errors caused by a transition, Dr. Singer disclaimed *any* reliance on the Alcatel and Lucent study for his assumption.<sup>31</sup> As a result, Dr. Singer has

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<sup>23</sup> See *id.* at 3 ("Professor Burger never contradicts my methodology.").

<sup>24</sup> Hal Singer, *Estimating the Costs Associated with a Change in Local Number Portability Administration* at 4, 2 (Jan. 2014), available at <http://www.ei.com/downloadables/SingerCarrierTransition.pdf>. ("*Estimating the Costs*").

<sup>25</sup> *Id.*

<sup>26</sup> Eric Burger, *Review of Dr. Singer's Analysis of the S<sup>2</sup>ERC Report* at 3, Oct. 22, 2014 (included as attachment to this letter) ("*Burger Analysis*").

<sup>27</sup> *Estimating the Costs* at 4, 2.

<sup>28</sup> *Id.* at 2.

<sup>29</sup> Singer Analysis at 2.

<sup>30</sup> *Estimating the Costs* at 2.

<sup>31</sup> Singer Analysis at 3 n.9 ("Professor Burger tries to distinguish the NPAC transition from those reviewed in the Alcatel-Lucent paper. *Burger Report* at 11. But the only input on which I rely from that study is the cost per hour for engineering time, an input that Professor

provided *no basis* for his assumed .25 percent error rate. Nor is there any reason to make such an assumption. As Dr. Singer concedes, “the majority of [his] estimated costs stem from a new LNPA’s lack of institutional experience managing transaction projects.”<sup>32</sup> Yet Telcordia has substantial experience processing number portability transactions internationally and processing NPAC transactions domestically. (Indeed, as noted previously, Telcordia actually processes a significant number of NPAC transactions, and if Telcordia suffered from a fundamental misunderstanding of how to interpret NPAC data fields, there would already be outages, which there are not.) More importantly, as Professor Burger points out in his analysis, even if Telcordia did make an error, those errors would be *systemic* errors that would likely be caught during system testing.<sup>33</sup>

Another 2 percent of Dr. Singer’s projected costs involve supposed outages caused by the transition. Once again, Dr. Singer fails to provide a reason to believe that there would be an increase in outages as a result of a transition. Dr. Singer’s sole basis for this assumption is that “Neustar had higher system outage rates during its early years than in it’s [*sic*] most recent years.”<sup>34</sup> He provides no justification for assuming that the early outages were caused by Neustar’s inexperience, as opposed to any other factor, such as implementing industry-requested changes in business processes or systems – which are not occurring in this database migration. Moreover, Telcordia— which processes millions of NPAC transactions and runs number-portability databases around the world—has much more experience with number portability than Neustar did at the time it was first administering the system.

In short, Dr. Singer cannot use the S<sup>2</sup>ERC report to somehow validate his inflated estimate of the costs of testing, and the other three costs included in his estimates are based on wholly unsupported assumptions. The Commission should disregard the Singer report.

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Burger does not contest.”). The Alcatel-Lucent paper also does not discuss a specific cost per hour for engineering time.

<sup>32</sup> Singer Analysis at 5.

<sup>33</sup> *Burger Analysis* at 3-4.

<sup>34</sup> *Estimating the Costs* at 3.

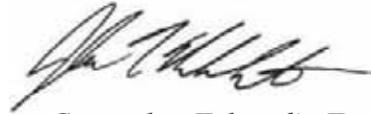
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The time has come for the Commission to bring its LNPA selection process to a close. The reality is that Telcordia is a well-qualified, technically capable, vastly lower bidder. Neustar's attempts to suggest otherwise are simply wrong – and run counter to the expert evaluation by the Commission's longstanding, expert, and balanced numbering advisory committee, which includes carriers that both carry out the greatest number of ports and pay the largest local number portability assessments. The industry, law enforcement, Telcordia and the Commission all have strong interests in Telcordia delivering a fully – or even better – functioning NPAC at the much lower price that Telcordia offered. It is time for the Commission to reaffirm that competition—not incumbency—prevails, and to select Telcordia as the next LNPA.

Sincerely,

John T. Nakahata



*Counsel to Telcordia Technologies, Inc.,  
d/b/a iconectiv*

cc:

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*Review of Dr. Singer's Analysis of the S<sup>2</sup>ERC Report*

By Professor Eric Burger

I have been asked by iconectiv to review the *Analysis of Technical Report by Professor Burger*, by Dr. Hal Singer.<sup>1</sup> Here is a summary of my findings:

- The S<sup>2</sup>ERC Report<sup>2</sup> estimates that the costs to test a new LNPA fall between approximately \$21 million and approximately \$48 million for the industry. There is mention of a \$160 million figure, but that is Standish's estimate based on Standish's assumptions; there was no validation of Standish's figure in the S<sup>2</sup>ERC Report.
- The S<sup>2</sup>ERC Report never suggested that each and every carrier would spend \$250,000 to \$1.5 million on pre-transition testing and preparation. The S<sup>2</sup>ERC Report estimated, based on the experience of the Number Portability Administration Center (NPAC) number pooling release, the per-carrier cost for those who execute IT projects would top out at a little under \$600,000. S<sup>2</sup>ERC also observed that generically (not relying on the NPAC number pooling experience) carriers that execute enterprise IT projects of a similar magnitude would spend from \$250,000 to \$1,500,000. However, the carriers that would execute enterprise IT projects for the LNPA transition would be limited to a few dozen carriers.
- Dr. Singer never proposes a technological explanation for his 0.25% error rate for interpreting data fields or systems transition during database migration. The proper error rate should be much closer to 0%. iconectiv processes millions of NPAC transactions per year today – if there were such a misunderstanding on iconectiv's part, we would detect it on a daily basis.
- Dr. Singer provides no basis for his assumed error rates underlying his estimates of early-stage operations or transaction processing costs. For example, he does not disclose either his basis for assuming that the new LNPA would have an error rate 0.81% greater than the incumbent or the baseline error rate of the incumbent. Moreover, he never explains why an experienced vendor would perform any differently than the incumbent. An experienced vendor may very well perform better than the incumbent, producing significant industry savings.

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<sup>1</sup> Singer, Hal, *Analysis of Technical Report by Professor Burger*, dated September 16, 2014, hereinafter referred to as the "Singer Analysis."

<sup>2</sup> Burger, Eric, Issues and Analysis of a Provider Transition for the NPAC, *Security and Software Engineering Research Center (S<sup>2</sup>ERC) Technical Report (Number Database Transition Analysis project)*, July 22, 2014, [http://s2erc.georgetown.edu/sites/s2erc/files/Software%20Engineering%20Database%20Transitions\\_0.pdf](http://s2erc.georgetown.edu/sites/s2erc/files/Software%20Engineering%20Database%20Transitions_0.pdf), hereinafter referred to as the "S<sup>2</sup>ERC Report."

- Dr. Singer provides no basis for any out-year assumptions as to error rates, and thus associated cost estimates, although he refers to such calculations in the discussion of “Sensitivity Testing” in his initial paper.<sup>3</sup>

## Major Components of Dr. Singer’s Cost Model

Dr. Singer states he built a cost model based on four components. These are “(1) systems transition (errors introduced during transition when NPAC records are propagated to the carriers); (2) transaction processing (error rates above current baseline due to lack of experience or expertise handling transactions that require customer coordination); (3) unplanned outages (increased probability of LNP service outages that would introduce long LNP porting delays) and (4) testing (testing costs between the new vendor and the carriers plus internal OSS/BSS testing).”<sup>4</sup> Let us examine the major components of his model.<sup>5</sup>

### Testing Cost Estimates

Based on the experience from the number pooling NPAC release, the S<sup>2</sup>ERC Report estimated the per-carrier cost for implementation and testing of a new vendor would top out at a little under \$600,000. To recap the S<sup>2</sup>ERC Report assumed a carrier put six full-time equivalent engineers on the project, with a fully burdened average cost of \$200,000/FTE/year, and using the effort of 123 days **or less** for the NPAC pooling release. With these industry numbers, the per-carrier cost **for carriers doing testing** would top out at a little under \$600,000.<sup>6</sup> Note that **only 36 carriers tested the number pooling release**. To be extremely conservative, we took Standish’s figure of 80 carriers to calculate an upper limit of approximately \$48 million.<sup>7</sup>

It is important to note that each and every carrier would **not** incur these costs. It is certainly possible that some carriers may choose to do even more extensive testing. The S<sup>2</sup>ERC observed that enterprise IT projects of this scale “run from \$250,000 to \$1,500,000.”<sup>8</sup> As stated in the S<sup>2</sup>ERC Report, however, that figure refers to generic IT projects. We have the benefit of the number pooling experience, which informs us the magnitude of this particular project as well as the very small number of carriers that will launch an enterprise IT project. The historic figure for the number of carriers doing implementation testing is 36. Standish’s number is 80. That is far less than the thousands of carriers that use the NPAC.

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<sup>3</sup> See Singer, Hal, *Estimating the Costs Associated with a Change in Local Number Portability Administration* [sic], <http://www.ei.com/downloadables/Dr.SingerCarrierTransition.pdf>, p. 5, hereinafter referred to as the “Singer Estimate.”

<sup>4</sup> *ibid.*, p. 2

<sup>5</sup> I have not examined Dr. Singer’s estimate of unplanned outage costs because this is only 2% of his total cost estimate. It is another unsubstantiated claim and as such this does not mean I agree with his estimate.

<sup>6</sup> S<sup>2</sup>ERC Report at 12-13.

<sup>7</sup> Standish Group, “Big Bang Boom,” <http://sgadmin2.standishgroup.com/files/BigBangBoom.pdf> p. 4.

Note there is no substantiation of the figure of 80 other than Standish’s reliance on Neustar for the figure.

<sup>8</sup> S<sup>2</sup>ERC Report at 11.

### System Transition (i.e., Migration Error) Cost Estimates

The Singer Estimate fails to identify the sources of error from the migration of the NPAC database to a new provider, other than his cite an unrelated Alcatel-Lucent study. In the Singer Analysis, he disclaims any reliance on the Alcatel-Lucent study to support his assumption of 0.25% data migration error.<sup>9</sup> Instead, Dr. Singer asserts (emphasis mine):

My cost model does not assume that the data itself will be transferred incorrectly; instead, it assumes a very slight percentage of the data and transaction instructions (0.25 percent) will be misinterpreted by one or more elements in the systems using the data. Indeed, the majority of my estimated costs **stem from a new LNPA's lack of institutional experience managing transaction projects.**

Dr. Singer does not provide any basis for his selection of 0.25% as the rate of misinterpretation, or for his assumption of a lack of relevant institutional experience for the new LNPA.

This issue was thoroughly discussed in the S<sup>2</sup>ERC Report. That report looked at the issues facing a transition of the NPAC to a new LNPA, **irrespective** of who new LNPA would be. Although an **inexperienced** LNPA vendor could have difficulty understanding an underspecified data model or, even if a data model if accurate and fully specified, an **inexperienced** vendor may not fully understand the model, the vendor selected by the NANC is not a random, inexperienced vendor picked off the street. A quick review of the public information available about iconectiv's experience shows the company is not a newcomer to the number portability industry. In fact, iconectiv has an order of magnitude more number portability customers and operates in many more environments than the incumbent.<sup>10</sup>

Even with the depth of industry knowledge iconectiv holds, one might argue that misunderstandings may still occur as with the airline industry examples that Dr. Singer initially cited but from which he later seems to have retreated.<sup>11</sup> However, iconectiv informs me that it processes **millions of NPAC transactions** per year through its North American NPAC Gateway product. Given that millions of people do not suddenly have their phone stop working on a daily basis, we have *prima face* evidence that iconectiv **does** understand the nuances of the NPAC.

Could there be errors introduced by a database migration? As noted above, the chance of a random error due to "misinterpret[ation] by one or more elements in the

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<sup>9</sup> Singer Analysis at n.9 ("[T]he only input on which I rely from that [the Alcatel-Lucent] study is the cost per hour for engineering time."). As a side note, the Alcatel-Lucent study does not provide a specific cost per hour for engineering time; thus, Dr. Singer's source for the cost per hour for engineering time is also unclear.

<sup>10</sup> See, e.g., *Telcordia secures new contract term for number portability in Mexico*, July 22, 2014, [http://www.iconectiv.com/news\\_events/pressreleases/2014/20140722\\_iconectiv\\_wins\\_mexico\\_number\\_portability\\_renewal.pdf](http://www.iconectiv.com/news_events/pressreleases/2014/20140722_iconectiv_wins_mexico_number_portability_renewal.pdf).

<sup>11</sup> "Because none of the inputs to my cost model relies on that example, whether the United-Continental merger is analogous to the NPAC transition is academic." Singer Analysis, p. 4.

systems using the data” is essentially nonexistent due to iconectiv’s substantial experience with the same number portability system. While there is a chance of a bug that could introduce errors, such systemic errors would likely be caught during system testing.<sup>12</sup>

### Transaction Processing Error Cost Estimates

The S<sup>2</sup>ERC Report did not address Dr. Singer’s “transaction processing” error cost estimate. Dr. Singer assumes that a new vendor would have a higher transaction processing error rate than the incumbent.<sup>13</sup> He states that he assumed a “0.81 percent increase from ongoing error rates in porting based on Neustar’s realized diminution in its own errors with experience; of those errors, only 63 percent were assumed to impact a customer’s service.”<sup>14</sup> However, he gives no justification for that assertion, either for the assumption that the new vendor would have an error rate higher than the incumbent or for the magnitude of the assumed differential in error rates. This assumption is particularly critical to his estimate, because it appears to account for 62.7% of his total estimated costs.

If the new vendor were a random company off the street, I could agree that it might have a higher error rate than the incumbent. However, it is quite possible that a vendor such as iconectiv that is experienced in many different number portability regimes may have internal processes that are superior to the incumbent. In fact, iconectiv might be able to dramatically reduce the baseline transaction processing error rate. Since this error rate dominates Dr. Singer’s calculations, by his logic a new, experienced vendor could save the industry millions of dollars.

Similarly, in the Singer Estimate, Dr. Singer asserts that errors in the second or later years would be \$200 million.<sup>15</sup> No analysis supports this claim or its underlying assumptions.

Given Dr. Singer’s unjustified assumptions, it is not possible for any third party to validate his estimates of costs associated with transaction processing errors, whether in the first year or in subsequent years.

### Other Aspects of Dr. Singer’s Methodology

It is difficult to analyze Dr. Singer’s model for calculating the cost of a transition. Dr. Singer, in his initial estimate,<sup>16</sup> informs the reader of only a few of the inputs to his model. Specifically, he mentions that:

- Data errors can have different costs, varying from zero to a lot. The example Dr. Singer gives is an error that affects Caller ID costs the carrier less than an error that affects call routing. However, nowhere does he disclose what those

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<sup>12</sup> S<sup>2</sup>ERC Report, p. 14.

<sup>13</sup> Singer Analysis, p. 2-3

<sup>14</sup> *ibid.*, p. 2-3.

<sup>15</sup> Singer Estimate, p. 5

<sup>16</sup> *ibid.*, p. 2.

costs are, where the cost comes from, what their impact is, and how he derives them.

- Costs are of different kinds: refunds, service credits, customer service costs, engineering costs, and opportunity costs from lost customers. Dr. Singer never lets us know what cost goes where, when it is applied, how he derived them, and how he applies them.

Since Dr. Singer has not provided any of these underlying assumptions, it is hard to claim, "Professor Burger never contradicts my [Dr. Singer's] methodology."<sup>17</sup>

## Conclusion

The S<sup>2</sup>ERC Report correctly estimated and documented the sources of the testing costs associated with the LNPA transition at levels below both Dr. Singer and the Standish Group. Dr. Singer's remaining cost estimates are based on many undisclosed and mostly unsubstantiated assumptions.

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<sup>17</sup> Singer Analysis, p. 3.