**Reconciling the VirnetX and Summit 6 Rulings**

Recent rulings by the United States Court of Appeals for the Federal Circuit have provided what may initially appear to be inconsistent guidance as to what it considers to be acceptable methodology for purposes of determining a reasonable royalty in patent infringement matters. In the matter of *VirnetX, Inc. and Science Applications International Corporation, v. Cisco Systems, Inc. and Apple, Inc.*, use of a 50/50 split of incremental profit attributable to infringement as a starting point for the hypothetical negotiation was determined to be inappropriate. However, in the matter of *Summit 6, LLC v. Samsung Electronics Co., et al.* the court determined that a hypothetical negotiation construct in which "neither party has a stronger negotiating position," a result in which the incremental "profit attributable to the infringement" is split evenly is "structurally sound [methodology] and tied to the facts of the case." This paper is an abbreviated version of the original work, which provides insight into the methodology used in the *VirnetX* matter and explains how such methodology differs from the methodology we used in the *Summit 6* matter.[i]

## I.     METHODOLOGY USED IN VIRNETX

In the *VirnetX* matter the Federal Circuit vacated damages, in part, because VirnetX, Inc.'s ("VirnetX") expert did not establish that the premises of the NBS theorem fit the facts of the case.[ii] The NBS equation as expressed by VirnetX's expert in published papers is stated as follows:

$$\Pi_1 = d_1 + 1/2\ (\Pi\text{-}d_1\text{-}d_2)$$
$$\Pi_2 = d_2 + 1/2\ (\Pi\text{-}d_1\text{-}d_2)$$
$$\Pi\ = \Pi_1 + \Pi_2$$

Where:

$\Pi_1$ = Profit for the Patent Holder / Licensor

$\Pi_2$ = Profit for the Infringer / Licensee

$\Pi$  = Feasible Payoff from Licensing

$d_1$  = Disagreement Payoff for the Patent Holder / Licensor

$d_2$  = Disagreement Payoff for the Infringer / Licensee [iii]

Working through the equation reveals that the disagreement payoffs of the licensor and licensee are the only factors that provide strength to the bargaining position of either party, and therefore determines which party would derive a greater share of the incremental profit associated with the licensee's use of the patent.

It is important to note that the Nash papers from which the above NBS equation was interpreted discuss negotiating over utility derived from an agreement, and does not equate utility with incremental profit in all instances. Rather, the Nash papers define the negotiating parties' utility by stating:

> In making our treatment of bargaining we employ a numerical utility . . . to express the preferences, or tastes, of each individual engaged in bargaining. By this means we bring into the mathematical model the desire of each individual to maximize his gain in bargaining.[iv]
>
> Only the attitudes (like or dislike) of the two individuals towards the ultimate results of the use of the various possible opposing pairs of strategies are considered . . .[v]

The NBS theorem requires that factors impacting utility be expressed mathematically and included in the amount that is being negotiated between the parties. Utility may reflect not only incremental profit from use of the patent, but also other likes and dislikes that result from the transaction.

One of the ways in which VirnetX's expert's royalty analysis failed to fit the facts of the case is that it oversimplified the definition of utility to consist only of incremental profit resulting

from the transaction. In doing so, he did not account for the risk that the defendants incurred when commercializing the technology, and also rendered the other utilities of the parties to be irrelevant. After determining that no disagreement payoffs could have been achieved by either the licensor or licensee, VirnetX's expert testified that the NBS indicates that the parties would therefore start the negotiation over the incremental profit generated from use of the patents-in-suit at a 50/50 split.[vi] Specifically, he testified:

> [I]f one party has better bargaining power than the other, it won't be 50/50 either. But Nash says . . . that the outcome will start at 50/50.[vii]

Notably, VirnetX's expert's testimony with regard to both the Apple and Cisco royalties provides no discussion of the impact that commercialization risk would have on the negotiation. Specifically, he testified:

> Cisco . . . builds the product. It takes the risk of selling the product. It sells the products. It has to distribute them and all the rest. So, yes, Cisco does all of those things. On the other hand . . . if Cisco didn't have access to these patents, Cisco wouldn't get the profit that these patents enable. So Cisco is better off sharing the profits created by the patents with VirnetX than it would be without doing a deal.[viii]

VirnetX's expert acknowledged that Cisco would have incurred the risk of implementing and commercializing the technology, yet made no attempt to quantify the impact of such risks on the outcome of the negotiation. Although not referenced in the Federal Circuit's ruling, this testimony provides an example of his failure to incorporate the facts of the case into his use of the NBS.

## II.    METHODOLOGY USED IN SUMMIT 6

In contrast to the methodology used in the *VirnetX* matter, the methodology used in the *Summit 6* matter relied on an analysis of the GP Factors to determine incremental profit from use

of the technology and quantified the imbalances between the parties that would have impacted the way in which the incremental profit would have been shared. The NBS theorem was cited in the Summit 6 damages analysis only to support the economic principle that once apportionments have been made to incremental profit, such that neither party has a stronger negotiating position relative to the profit that remains the subject of negotiation, the parties must split such profit equally.[ix] To illustrate how the analysis of the GP Factors were tied to the facts of the *Summit 6 v. Samsung* matter, the data that was publicly disclosed in the Federal Circuit ruling has been utilized. Relevant facts disclosed in the Court's ruling include:

- A determination was made through use of cost data and surveys that wireless carriers pay $14.15 to include a camera component in Samsung's phones;

- Surveys commissioned by Samsung were utilized, in conjunction with publicly available surveys, to determine that 20.8% of images taken using the camera component were sent from the phone using the patent-in-suit. As such, accused device revenue of $2.93 was apportioned to use of the patent-in-suit.

- Calculations of Samsung's incremental profit margins were made.

- Calculations of Samsung's required rate of return for use of its working capital and fixed assets were made.

- Having accounted for Samsung's incremental costs and required return on working capital and fixed assets, the profit that remained to be negotiated between the parties was $0.56 per accused device.

- The negotiating positions of the parties were analyzed and it was determined that neither party had a stronger negotiating position, therefore the $0.56 per accused device would have been split evenly to derive a reasonable royalty of $0.28 per device.

The above stated facts are utilized in the analysis provided in the following paragraphs, which illustrates how the parties to a hypothetical negotiation would arrive at a reasonable royalty given the various facts and circumstances of the case. In certain instances, hypothetical variables have been utilized to show the impact that such variables would have on the calculation.

As stated above, it was determined that Samsung's use of the patent-in-suit resulted in incremental revenue of $2.93/unit. To determine how much of the $2.93/unit in incremental revenue would be the subject of the hypothetical negotiation, analyses were conducted of Samsung's financial data to determine the company's incremental profit margin. For purposes of this example, I have utilized a hypothetical incremental profit margin of 40%, resulting in a profit of $1.17 per accused device.

It is at this point in the analysis that the methodology utilized in the *Summit 6* matter differs significantly from the analysis conducted in the *VirnetX* matter. Using the methodology advocated in the *VirnetX* matter, the incremental profit of $1.17 would be split equally between the parties because neither party could achieve the incremental profit without reaching an agreement for use of the patent. Although it is important to consider each party's ability to independently obtain the incremental profit generated from use of the patent, such a determination is not sufficient to the quantification of a reasonable royalty. A determination must be made of the benefits and costs associated with the transaction that are inseparable from each party and result in negotiation imbalances.

One negotiation imbalance that may exist and is easily quantifiable is the licensee's required rate of return on use of its tangible assets. Such required rates of return reflect the risk that would have to be taken by the licensee when it invested in the tangible assets needed to generate the incremental revenue associated with use of the patent. While an actual quantification

of Samsung's required rate of return was made in the *Summit 6* matter, for purposes of this example I have hypothetically assumed that the required rate of return on use of Samsung's tangible assets was $0.61/unit. As shown in FIGURE 1, such required rate of return creates a negotiation imbalance, and should be quantified and removed from incremental profit when appropriate to determine the excess earnings that will remain as the subject of the negotiation.

**FIGURE 1**
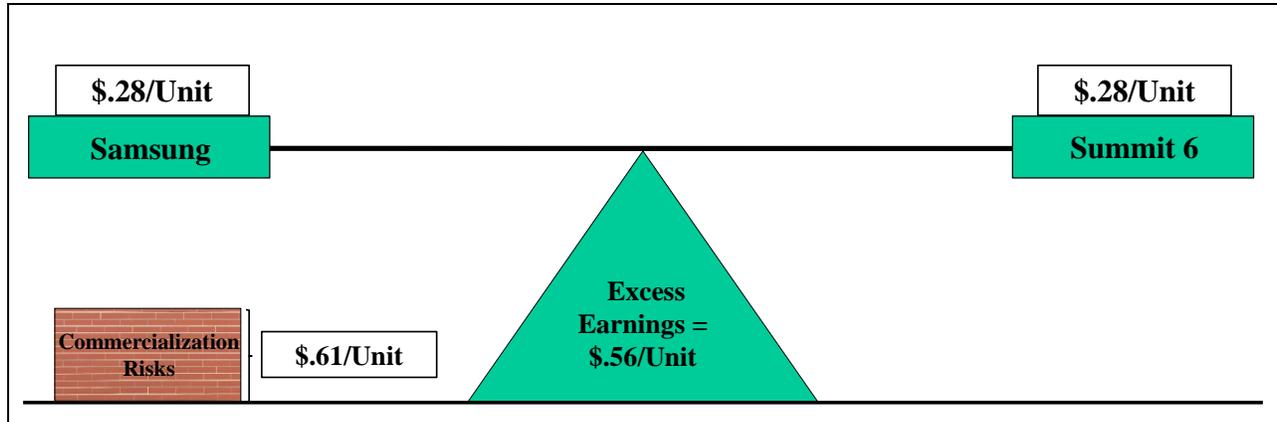
**NEGOTIATING POSITION OF THE PARTIES**
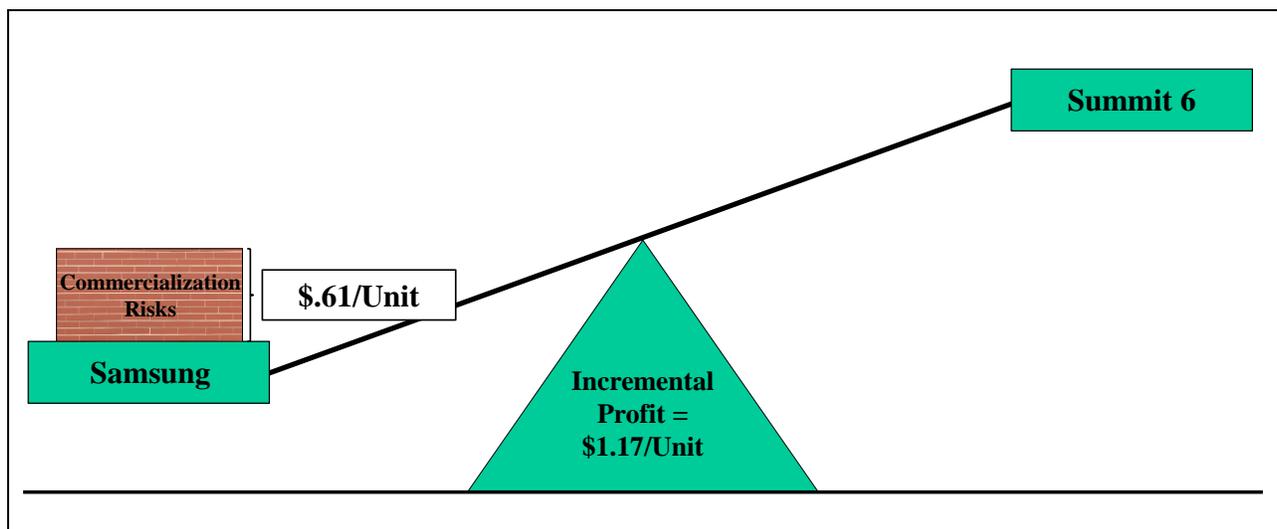


Required returns on tangible assets will vary, not only based on the relevant time period of the analysis, but also based on the industry in which the licensee operates, due to the fact that certain industries are very capital intensive while others are not. FIGURE 2 below reflects the relative percentage of tangible assets to intangible assets of companies in the S&P 500 index from 1975 through 2010, indicating that historically a substantially greater percentage of a company's assets consisted of tangible assets.

**FIGURE 2**

**COMPONENTS OF S&P 500 MARKET VALUE** [x]
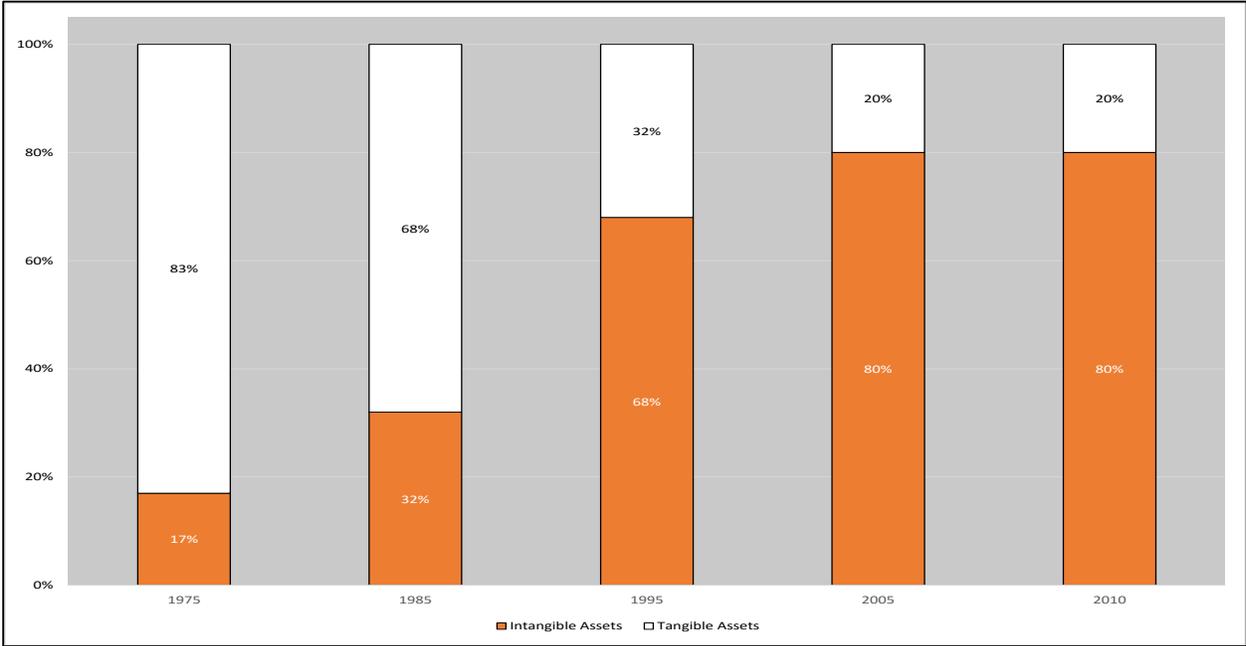


Given that the $0.61/unit required return is inseparable from Samsung in the negotiation, Samsung must receive $0.61/unit of the $1.17/unit of incremental profit before the parties can continue the negotiation. As shown in FIGURE 3, once the $0.61/unit is removed from incremental profit, $0.56/unit remains as the subject of the negotiation.

**FIGURE 3**

**NEGOTIATING POSITION OF THE PARTIES AFTER REMOVAL OF**

**RISKS ASSOCIATED WITH COMMERCIALIZATION**

| | |
|---|---|
| **$.28/Unit** | **$.28/Unit** |
| **Samsung** | **Summit 6** |

**Commercialization Risks**

**$.61/Unit**

**Excess Earnings = $.56/Unit**

In addition to quantifying costs that are inseparable from each party to the negotiation, benefits associated with the negotiation that are inseparable from each party should also be quantified. Such benefits may result from the cash positions of the parties, as well as other case specific facts. Once quantified, these benefits impact the hypothetical negotiation in a manner that is similar to that of the inseparable costs. For example, if at the time of the hypothetical negotiation, Summit 6 had a benefit associated with the transaction equal to $0.10/unit due to its cash position, Samsung would require $0.10/unit before continuing the negotiation over the remaining $0.46/unit. The parties would then be at an equal negotiating position over the remaining $0.46/unit, and as such would share the remaining $0.46/unit equally, resulting in a royalty of $0.23/unit. However, as stated in the Federal Circuit's ruling, the negotiating positions of the parties in the *Summit 6* matter were analyzed and it was determined that neither party had a stronger negotiating position, therefore the $0.56 per accused device would have been split evenly to derive a reasonable royalty of $0.28 per device.

Note that no "rule of thumb" was applied at any step of the analysis in reaching the

hypothetical split of 23.9%/76.1% in favor of the licensee. Rather, rigorous analysis is required to quantify the economic differences that exist between the negotiating parties, removal of which places the parties at a point of equilibrium when negotiating over the remaining benefit from use of the patent.

### III.     COMPARISON OF THE NBS ANALYSIS TO THE GP FACTOR ANALYSIS

As previously discussed in this paper, the primary difference between application of the NBS and the GP Factors is that, absent disagreement payoffs, the NBS requires a 50/50 split of all utility (not incremental profit) that the parties attribute to the use of the patent, whereas the GP Factors guide the quantification of excess earnings associated with use of the patent, allowing other likes and dislikes of the parties to determine how the parties would reasonably share the excess earnings. FIGURE 4 below highlights the distinction between the two methodologies.

**FIGURE 4**
**DISTINCTION BETWEEN NBS AND GP FACTOR ANALYSIS**
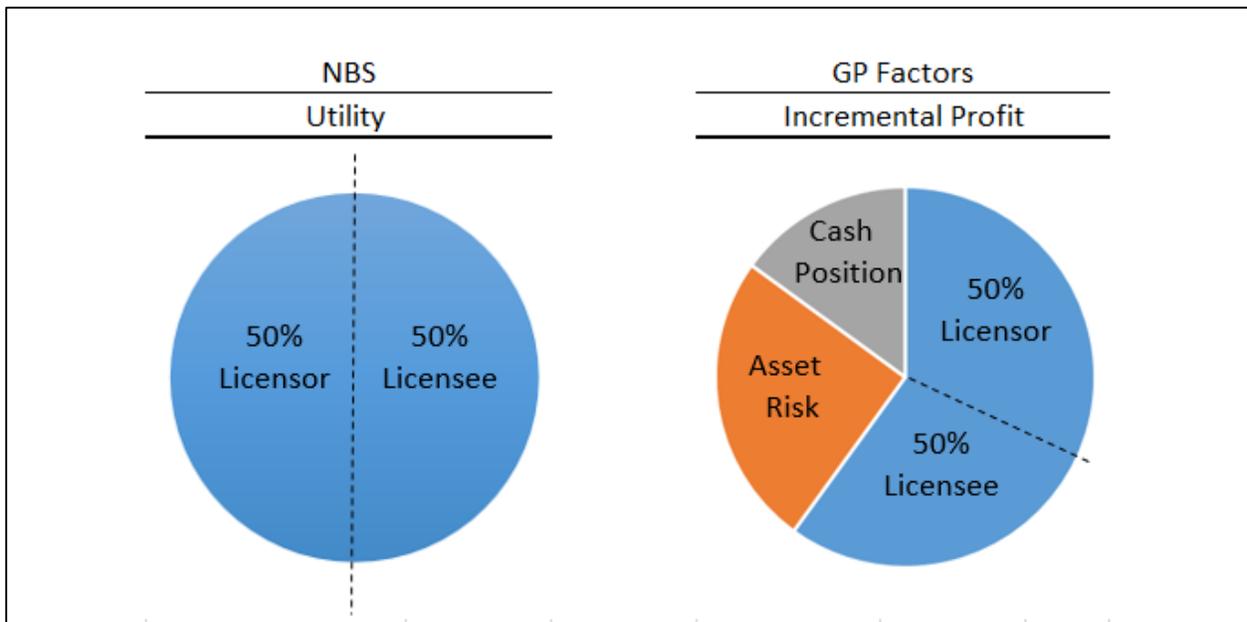
By applying the NBS theorem to incremental profit, rather than utility, VirnetX's expert utilized the theorem in such a way that made all of the negotiation imbalances between the parties irrelevant, resulting in an analysis that was not tied to the facts of the case. Proper use of the NBS axioms requires the quantification of utility to go beyond merely calculating the incremental profit that results from the licensing transaction, thereby allowing differences in utility between the parties to impact the negotiation.

## IV. CONCLUSION

Recent rulings by the Federal Circuit have highlighted the need for rigorous analysis in applying the facts of the case to the royalty opinion. This is true not only for use of the NBS but also for use of the GP Factors.

Given recent improper use of the NBS, it is not surprising that the Federal Circuit may be skeptical regarding the ability of experts to precisely tie the theorem to the facts of the case. It should be noted, however, that an advantage of properly using the NBS theorem and GP Factors is transparency. Quantification of the utility that the parties to the hypothetical licensing transaction would enjoy from use of the patent is a question of fact on which experts may disagree. The court should not be burdened with having to determine whether the utility from use of the patent has been precisely quantified by the expert. In fact, such a precise determination would render a trial on damages irrelevant because the court would have already determined the exact amount of the royalty. Proper application of the NBS theorem and GP Factors provides the arbitrator of fact a transparent mechanism for determining the impact that disagreements regarding utility would have on the negotiation. Unfortunately, in patent infringement matters involving experts that make proper use of the NBS theorem and GP Factors, opposing experts far too often

incorrectly characterize the methodologies as applications of a rule of thumb and make no effort

to quantify such utility themselves. Instead these experts chose to rely on what Judge Rader

referred to as "[t]he worst abuse I've seen" in royalty calculations; the thumbs-up, thumbs-down

application of the GP Factors.[xi]

**ABOUT THE AUTHORS**

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[i] www.nouvelleanalytics.com.

[ii] VirnetX, Inc. and Science Applications International Corporation v. Cisco Systems, Inc. and Apple, Inc., Court of Appeals, Federal Circuit 2014.

[iii] William Choi and Roy Weinstein, An Analytical Solution to Reasonable Royalty Rate Calculations (July 2000).

[iv] Nash, John F., "The Bargaining Problem," *Econometrica*, Vol. 18, No. 2, April 1950, p. 156.

[v] Nash, John F., "Two-Person Cooperative Games," *Econometrica*, Volume 21, No. 1, January 1953, p. 128.

[vi] VirnetX, Inc. v. Apple, Inc., District Court, East District Texas 2012; The term disagreement payoffs are described by Mr. Weinstein in the paper coauthored with William Choi titled An Analytical Solution to Reasonable Royalty Rate Calculations, which states that one of the axioms of the NBS is that negotiators must collectively behave in a rational manner such that neither side gets less in the bargaining solution than could be obtained in disagreement.

[vii] VirnetX Inc. v. Cisco Systems, Inc., District Court, East District Texas 2013.

[viii] VirnetX Inc. v. Cisco Systems, Inc., District Court, East District Texas 2013.

[ix] Note, however, that the NBS is not necessary to support such a conclusion, because the GP Factors require that the benefit from use of the patent be shared between the partied based on the respective bargaining positions, and when such positions are equal it follows that the sharing of the benefit must also be equal.

[x] Ocean Tomo; http://www.oceantomo.com/productsandservices/investments/indexes/ot300.

[xi] More Rigor Needed In Patent Damages Requests, Judges Say, Ryan Davis, Law360, April 3, 2014.