### What (Exactly) Are Patents Worth at Trial? The "Smartphone War" Example

Jonathan D. Putnam Charles River Associates

"Patent Infringement Damages—Making the Most of the End Game!" AIPLA Spring Meetings, May 11, 2012



# **Complex Products Embody Many Features**





#### Features Earn Profits In Many Forms Not Just IP





# **Apportioning Profit Among Features**

"... the portion of the realizable profit that should be credited to the invention, as distinguished from non-patented elements, the manufacturing process, business risks, or significant features or improvements added by the infringer."

-- Georgia-Pacific factor 13



### Some notable jury awards

#### Lucent

Accused sales:
Plaintiff demand:
Jury award:

\$ 8 billion\$562 million (7% of sales)\$358 million (4.5% of sales)

#### Uniloc

- ▲ Accused sales:
- Plaintiff demand:
- ▲ Jury award:

\$ 19 billion\$565 million (3% of sales)\$388 million (2% of sales)



# Lucent and Uniloc on appeal

#### Lucent

We find it inconceivable to conclude ... that the use of one small feature ... constitutes a substantial portion of the value of Outlook... the only reasonable conclusion is that <u>most of the realizable profit</u> <u>must be credited to [other] elements</u>, such as "the manufacturing process, business risks, or significant features or improvements added by [Microsoft]."

#### Uniloc

Evidence relying on the 25 percent rule of thumb [to determine profit shares] is thus inadmissible ... because it fails to tie a reasonable royalty base to the facts of the case



# The Void Left By Uniloc

#### Generic fact pattern

- Complex device (smartphone, processor, ...) embodies 100s or 1000s of patents
- ▲ A "small" number of asserted patents
- But everything else is "large"
  - Accused sales
  - Current profits
  - Switching costs
  - ♦ → Plaintiff damages demand

With no 25 Percent Rule, is there any "rule" for determining one patent's share of profit?

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## A Better "Rule" For Determining One Patent's Share Of The Profit

If you know

the size of the profit to be divided

and you can

- **<u>count</u>** the number of relevant patents
- <u>rank</u> the patents in order

#### then you can

- ▲ <u>divide</u> the profit shares among the patents, so that
- ▲ the sum of shares adds up to 100%



# So Is This Just Another "Rule"?

#### No

The value depends on a patent's rank

 Rankings are often fact-intensive and case-specific
 Must identify all "peers" in the same product and compare to them – control for market conditions

Assume that the "count" (number of patents) and "rank" steps have already been carried out

Focus on the "divide" step – each patent's <u>share</u>



### Steps To Obtaining Reliable Profit Shares

- Find the right distribution family
- Find the right member of the family
- Derive formula for shares from choice of member
- Assess sensitivity of shares to the assumptions
- Determine variability of shares in small portfolios
- Etc. (what you pay an economist for ...)



### Steps To Obtaining Reliable Profit Shares

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### Where Does Each Patent's Share Come From?

For 25 years, economists have studied the distribution of patent values in large samples

- Value distributions arise from patentee decisions
  - where to patent
  - when to patent / maintain the patent
- Various methods, countries, technologies, models

#### Basic results

- Values highly skewed (many low values, few highs)
- Patent values vary greatly by country, tech field, etc.
- Aggregate value of patent rights is 15 25% of R&D



### **Distributions 101 – The "Bell Curve"**

#### Normal distribution: positive and negative values, symmetric



## Patent Values Do Not Fit The "Bell Curve"



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## The Output

Determine each patent's ratio to the average patent's share (0.1% in 1000-patent portfolio)

Some exemplary ratios:

<u>Percentile</u>	<u>Ratio</u>	Share of 1000- patent portfolio
<b>50</b> <sup>th</sup>	0.2	0.02%
75 <sup>th</sup>	0.9	0.09%
90 <sup>th</sup>	2.1	0.21%
95 <sup>th</sup>	3.7	0.37%



### Example

#### Suppose an accused product

- generates \$5 billion in sales
- yields \$1 billion in profit (20% margin all patents)
- embodies 1,000 patents
  - → average profit per patent is \$1 million
  - then the expected values are approximately

<u>Percentile</u>	<u>Ratio</u>	<u>Share</u>	<u>Value</u>
50 <sup>th</sup>	0.2	0.02%	\$ 200,000
95 <sup>th</sup>	3.7	0.37%	\$3,700,000



### Lorenz graph – patents ordered low to high





### Lorenz graph – patents ordered low to high





### Expected shares do not vary as the pie varies





# **Revisiting Lucent's \$562 million demand**

#### Suppose

- Lucent's patent ranked in the 95<sup>th</sup> percentile among Microsoft patents
- Therefore, the patent is expected to be worth 3.7 times the value of the average Microsoft patent
- ▲ Therefore, the <u>average</u> Microsoft patent must be:

\$562 million

- ÷ 3.7 multiplier for a 95<sup>th</sup> percentile patent
- = \$152 million average Microsoft patent value

Is this possible?



# **Revisiting Lucent's \$562 million demand**

#### Suppose

- 95<sup>th</sup> percentile rank among MSFT patents
- ◆ → 3.7 times the value of the average MSFT patent
- ▲ → 18,000 MSFT U.S. patents @ \$152M = \$2.7 trillion
- Microsoft market capitalization: \$270 billion

#### What are per-patent averages (recent transactions)?

- MSFT AOL: \$1.1M per patent
- Facebook MSFT: \$0.9M per patent
- Others (Novell, Nortel, Motorola, ...): \$0.5 \$2.0M per patent

#### Ripe for summary judgment / motion in limine?

# **Revisiting Lucent's \$562 million demand**

A better guess for the value of Lucent's patent:

#### Suppose

- \$8.0 billion accused sales
  - x 40% profit margin
  - = \$3.2 billion profit (too high only patents)
  - ÷ 500 Outlook patents
  - = \$6.4 million profit per patent (too high \$2M?)
  - x 3.7 multiplier for a 95<sup>th</sup> percentile patent
  - = \$23.7 million\*

\* JMOL: \$26.3 million



## **Oracle v. Google**

Frame the damages claim first – <u>before</u> trial

"What share of the hypothetical license would have been accounted for by an Oracle patent?"



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Frame the damages claim first – <u>before</u> trial

"What share of the hypothetical license would have been accounted for by an Oracle patent?"

Therefore, Dr. Cockburn can opine that the 569 patents that would have been included in the 2006 license bundle had a valuedistribution curve similar to that observed in the three cited studies three of the patents in suit, [and] were among the 22 most valuable patents in the bundle (top 4%), but cannot opine that those three patents were the most valuable of the 569 patents (top 0.5%)"

> ORDER GRANTING IN PART AND DENYING IN PART GOOGLE'S *DAUBERT* MOTION TO EXCLUDE DR. COCKBURN'S THIRD REPORT http://www.groklaw.net/pdf3/OraGoogle-785.pdf



# **Oracle v. Google**

Frame the damages claim first – <u>before</u> trial

"What share of the hypothetical license would have been accounted for by an Oracle patent?"

 Total Oracle patents Asserted patents' place What is their share? Oracle Google Court expert 569 Top 22

Count Rank

Divide



# **Confidence intervals in finite samples**





## **Ruling Out Inconsistent Claims**





### How Has "Count, Rank & Divide" Fared In Court?

"... the Court finds [the] methodology to be credible and consistent with Federal Circuit case law and the Georgia Pacific factors ....

"With AUO's aggregate claim against LGD assessed, Dr. Putnam then used a method described as "count, rank, and divide" to determine the portion of the claim attributable to the four asserted patents. This method takes into account *Georgia Pacific* factors 9-11.

"Based on the value share of each patent in AUO's portfolio and based on the assumption that these patents are in the top 5% of AUO's portfolio, Dr. Putnam determined that AUO's damages for infringement of all four patents would total \$305,399 ..."

-- LG Display v. AU Optronics et al., Civ. Ac. No. 06-726 (D.Del. 2009) (Farnan, J.)



### How Has "Count, Rank & Divide" Fared In Court?

#### Admitted at trial (over *Daubert* challenge)

Energy Transportation Group v. Sonic Innovations et al. (D. Del. 2008) (Sleet, J.)

#### Cited by Oracle in support of expert testimony

ORACLE AMERICA, INC.'S OPPOSITION TO GOOGLE'S MOTION TO STRIKE PORTIONS OF THIRD EXPERT REPORT BY IAIN COCKBURN AND EXPERT REPORT BY STEVEN SHUGAN, Feb. 24, 2012 (Dkt. No. 737)



### FAQs

- Does this method work for every product?
- What is the right definition of "profit"?
- How do you determine the number of "relevant patents"? And what if you're wrong?
- How do you rank patents? What if you're wrong?
- What about non-patent sources of profit (like copyrights or trade secrets or ...)?



### **More FAQs**

Does your method assume that the asserted patent is valid and infringed?

Your method is based on patents from a different firm / country / technology / time period – does it still apply to my case?

Is this the only way to apportion profits?

How much "wiggle room" is there in your calculations?



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\* The foregoing presentation is an incomplete description of one method of apportioning profits. It does not and cannot substitute for a complete economic analysis of patent damages, which must be tied to the facts of a particular case.

