A changing environment –

Is the next patent war just around the corner?

Prof. Dr. Gunther Friedl

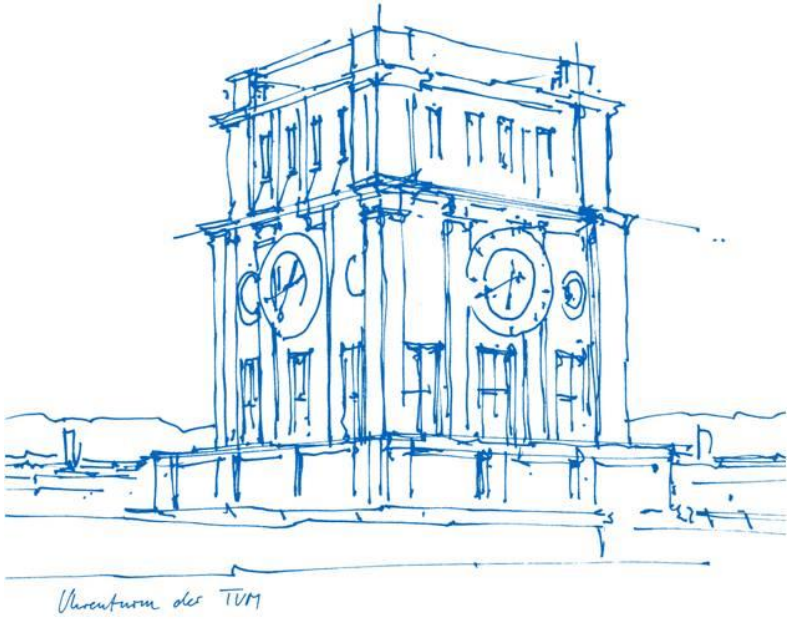
TUM School of Management

Technical University of Munich

Automotive Patent Wars

BARDEHLE PAGENBERG

Munich, May 9, 2019



Agenda

1. Introduction
2. A new patent war in the automotive industry?
3. What is FRAND? Thoughts on the valuation of SEPs

The ‘smartphone patent wars’ have gained great attention in mainstream media since 2009 – some prominent examples

October 22, 2009

Nokia suing Apple over the iPhone

Nokia, the world's biggest mobile phone maker, has said that it is suing its US rival Apple for infringing patents on mobile phone technology for the iPhone.

Nokia said it had not been compensated for its technology, and accused Apple of "trying to get a free ride on the back of Nokia's innovation".

The alleged patent infringement applie to all iPhones since its 2007 launch

March 2, 2010

Apple sues HTC over iPhone patents

Taiwanese mobile-phone manufacturer backing Google's Android OS is accused of infringing 20 Apple patents

September 8, 2011

Google Hands HTC Patents to Use Against Apple in Smartphone Wars

Phil Milford and Susan Decker
8. September 2011, 06:00 MESZ

HTC Corp., Asia's second-biggest smartphone maker, is using nine patents bought from Google Inc. last week to pursue new infringement claims against Apple Inc.

Google had taken ownership of the patents less than a year ago, with four of the patents originating from Motorola Inc., three from Openwave Systems Inc. and two from Palm Inc., according to U.S. Patent and Trademark Office records. Jim Prosser, a spokesman for Mountain View, California-based Google, wouldn't discuss reasons for the nine transfers to HTC.

September 14, 2012

Apple Scores Its Second Win In A Month In Its Smartphone Battle With Samsung

By Susan Decker

Sept. 14 (Bloomberg) -- Apple Inc. won a round of a U.S. International Trade Commission case brought by Samsung Electronics Co. over patented technology in the iPhone and iPad tablet computer, its second U.S. legal victory in a m smartphone competitor.

Apple didn't violate Samsung's patent rights, Gildea said in a notice posted on the agency's findings are subject to review by the full com power to block imports of products that infri

April 25, 2014

U.S. appeals court revives Apple patent lawsuit against Google

Diane Bartz, Dan Levine

WASHINGTON (Reuters) - A U.S. appeals court on Friday revived patent claims Apple made against Google's Motorola Mobility unit that had been dismissed shortly before trial, giving the iPhone maker another chance to seek a sales ban against its smartphone competitor.

January 14, 2015

Ericsson Sues Apple Over Patent Licensing, Seeks To Block iPhone And iPad Sales

Darrell Etherington @etherington / 4 years ago

October 14, 2018

Unwired Planet v Huawei: Court of Appeal Upholds Birss J’s Judgment

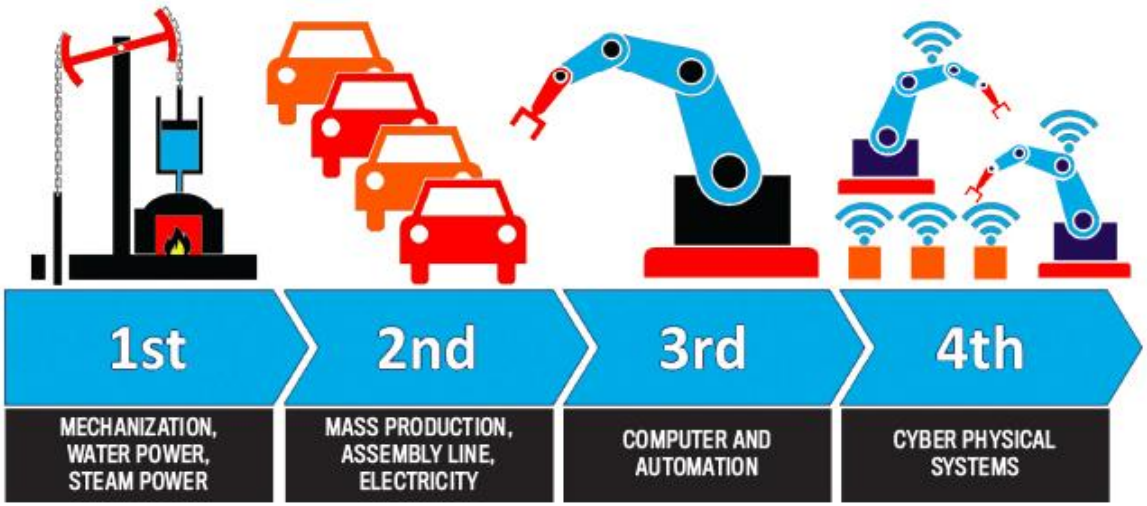
Brian Cordery (Bristows) / October 24, 2018

by Pat Treacy, Sophie Lawrance, Francion Brooks and Helena Connors

Yesterday, the Court of Appeal handed down its highly anticipated appeal judgment in *Unwired Planet v Huawei*. The unanimous judgment dismissed Huawei's appeal, confirming Mr Justice Birss' first instance decision in relation to the FRAND licensing of standard-essential patents ("SEPs"). The Court of Appeal considered three specific issues from the first instance decision.

1. A FRAND licence may be global. The Court of Appeal disagreed with the first instance Court that there is only "one true FRAND" set of rates and terms (this was the only substantive point of disagreement with Birss J). However, this did not affect the decision reached at first instance. The Court of Appeal distinguished between the question of relief for patent infringement (endorsing Aldous LJ's decision in *Coflexip* about the scope of such relief matching the scope of the rights) and

The digital revolution builds upon communication standards to interconnect devices

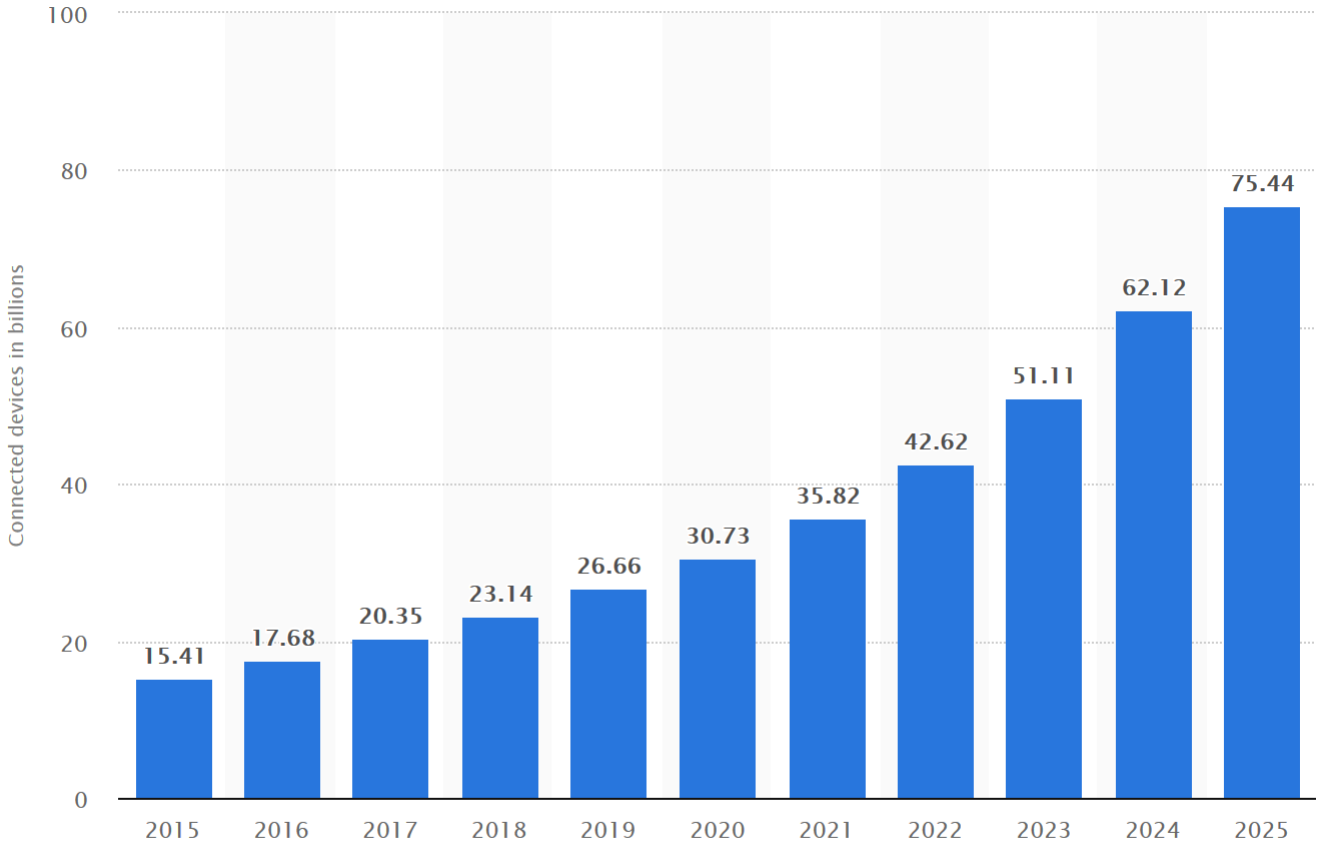


Machine Learning, Artificial Intelligence, Self-Driving Cars, etc…

Almost every major improvement in current technology requires information that is transferred via communication systems.

Source: Christoph Roser, AllAboutLean.com

Internet of Things connected devices installed base worldwide from 2015 to 2025 (in billions)



Emerging technologies are highly dependent on the access to communication technology

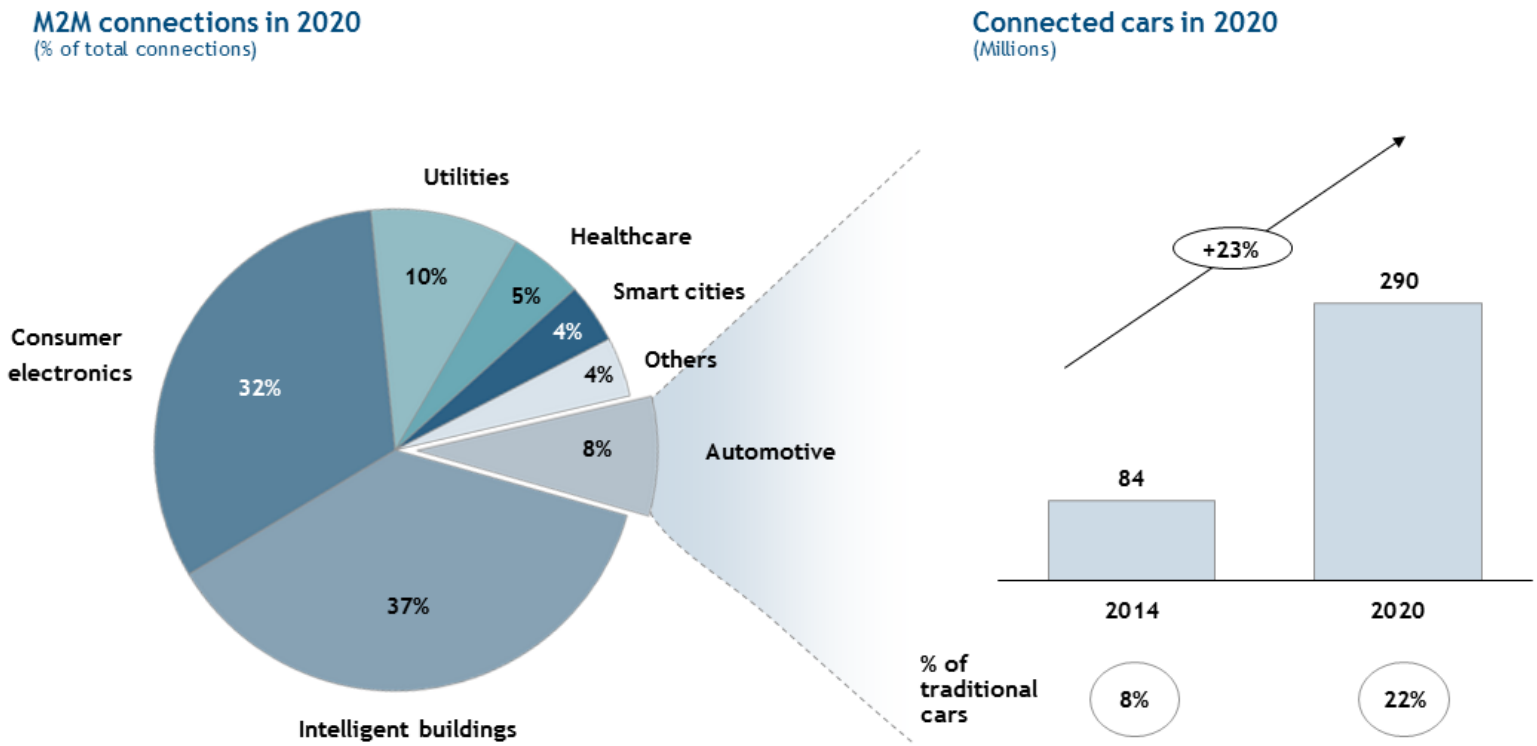
- Access to communication technology is an **integral part of new technologies**, e.g., **autonomous devices** (cars, drones, robots, etc.)
- Even more critical for **patented standardized technologies**, e.g., e-mobility charging systems
- Access to patented communication technology means **license in or purchase**
- Licensing: **standard essential patents (SEPs)** must be licensed under **FRAND** rules, i.e., fair, reasonable and non-discriminatory

- Key question: **What exactly is FRAND?**

Agenda

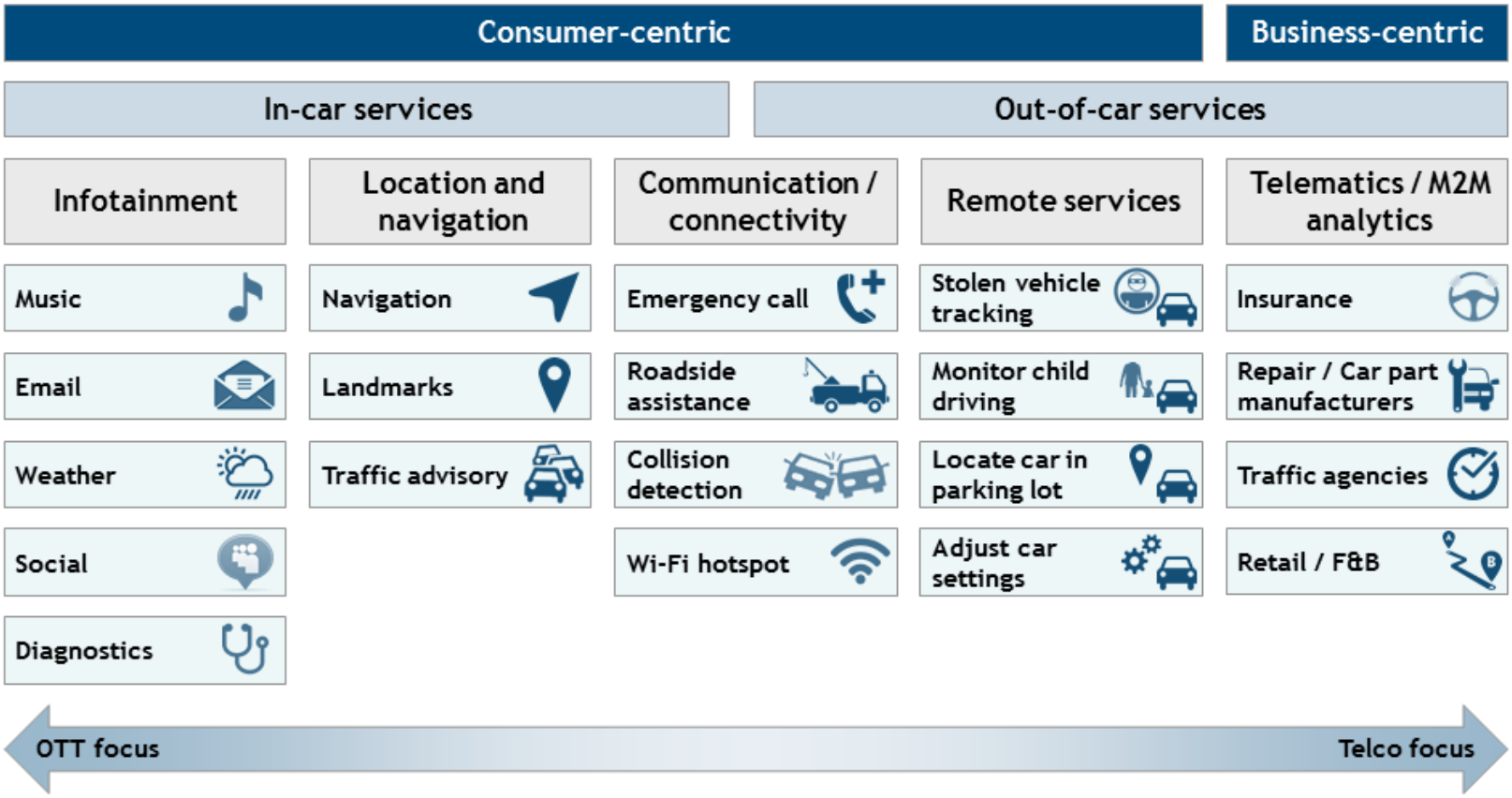
1. Introduction
2. A new patent war in the automotive industry?
3. What is FRAND? Thoughts on the valuation of SEPs

The automotive sector is expected to become one of the largest users of machine to machine connections



Source: Goldman Sachs; CrunchBase; Delta Partners analysis

Connected cars are only one example for the important role of telecommunication technologies in the future



Source: Delta Partners

5G vs. Wi-Fi: The technology battle is still going on

- 5G could be suitable for **a wider range of applications** like navigation, traffic and entertainment but is not available yet.
- Wi-Fi can be used to make the roads safer and is **ready to use**.
- The **European Commission** favors WiFi as the technology for connected cars.
- Volkswagen, Renault, Toyota, NXP, Autotalks and Kapsch TrafficCom **plan on a Wi-Fi-based standard.**
- BMW, Daimler, Ford, PSA Group, Deutsche Telekom, Ericsson, Huawei, Intel, Qualcomm and Samsung **would like to see 5G as the dominant technology.**

Picture: Audi

Avanci offers pooled licensing of SEPs used in wireless telecommunication technology

- Avanci is a **patent pool** for licensing wireless technology used in Internet of Things (IoT) devices, e.g., connected cars, connected homes

- Avanci aims to **simplify licensing (‘one-stop access’)** for car manufacturers and technology companies
- Under current terms, licensees pay a **fixed fee** per device (e.g., per car)
- Licensees currently include **VW, BMW, Audi, and Porsche** (communication technology in their cars will be a critical issue for them in the future)
- Patent pools may be one way to meet both the licensees’ and the SEP owners’ interests

Who owns SEPs (4G, 5G)?

Firm	Estimated % LTE/4G SEP families	Estimated % 5G SEP families
Samsung	13.49%	5.77%
Qualcomm	9.41%	8.6%
Huawei	9.88%	7.92%
LG	6.13%	7.38%
Ericsson	6.58%	6.74%
Nokia	8.74%	3.48%
NTT DoCoMo	4.28%	2.61%
ZTE	1.4%	4.1%
Google (Motorola Mobility)	4.79%	--%
InterDigital	4.52%	1.08%
Total (Top 10)	**69.96%**	**51.7%**
Total (Top 20)	**86.65%**	**65.21%**

Sources: Pohlmann 2018, WIPO 2017

Some crucial questions are not answered yet

- How will the issues of indemnification and licensing be addressed within the automotive **supply chain**?
- **Who should pay** licensing fees? Manufacturers, suppliers, or both?
- Will there be continued tension over **royalty rates** in the future?
- What is the **exact value** of telecommunication technology installed in cars? What is the value of single SEPs?
- The economic value of SEPs will be discussed in the next section.

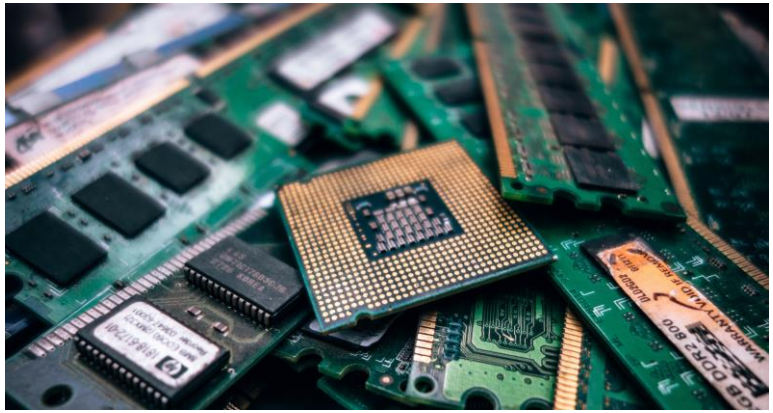
Agenda

1. Introduction
2. A new patent war in the automotive industry?
3. What is FRAND? Thoughts on the valuation of SEPs

Current debate focuses on the question of how FRAND terms can actually be determined

- Five different approaches are being discussed:

1. Entire market value rule (EMVR)
2. Smallest saleable patent practicing unit (SSPPU)
3. Bottom-up approach
4. Top-down approach
5. Cost-based approach



The EMVR calculation yields high licensing fees and tends to be favored by SEP holders

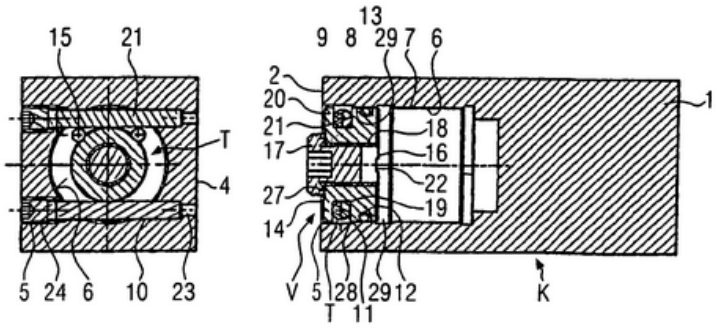
1 Entire market value rule (EMVR)

- EMVR was developed for the **initial, easy case**: SEPed invention makes up entire product value
- Under EMVR, FRAND calculation based on number of **absolute sales of all products** using the SEP
- This value is then used to determine the appropriate license fee rate of the SEP
- But: product value rarely hinges on
  - just **one single** invention
  - protected by **one single** SEP
- For **multi-component products** (e.g., smartphone), patent holders must prove that all product demand is caused by their specific SEPed invention

The SSPPU calculation tends to yield low licensing fees and is therefore favored by SEP users

2 Smallest saleable patent practicing unit (SSPPU)

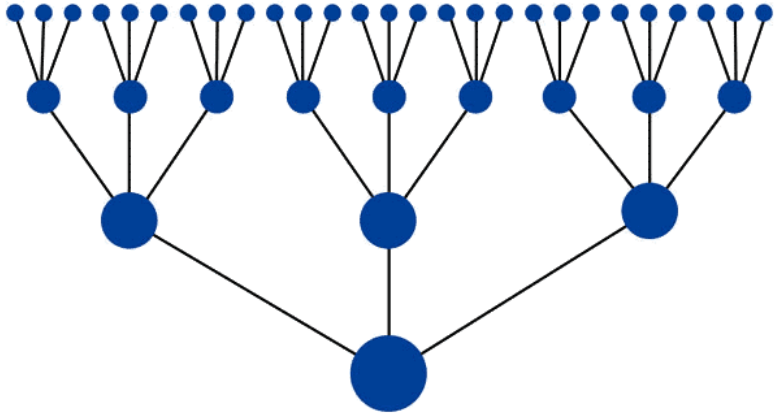
- SSPPU is based upon the idea that **complex devices need to be broken down** into the smallest saleable patent practicing unit using the SEP
- SSPPU was presented in an effort to prevent EMVR induced “exaggerations“ of inventors’ rewards
- However, use of SSPPU value (sales price) does not guarantee FRAND compliance:
  - What’s the SSPPU’s value, if small unit is used in products of different complexity and price?
  - What if SSPPU has no actual but only potential market - as in Cornell v. HP Co. (2009)?
  - What if SSPPU lives off synergies, i.e. holds value because of integration into a cell phone?



The BUA necessitates the search for equivalent SEPs which may not be possible in real-world scenarios

3 Bottom-up approach (BUA)

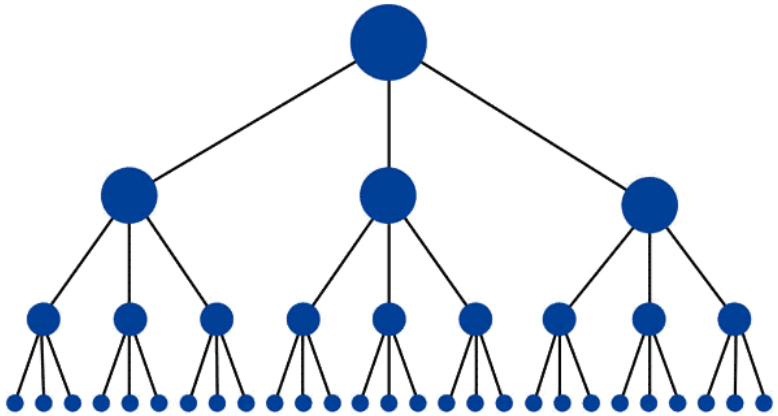
- BUA determines fee of adequate alternative to the SEP in question
- This fee must be divided by the total number of products to determine a max license fee per product
- BUA implies that SEP-licenses shall be compared to licenses for comparable patented technologies available on the market
- While the orientation at equivalents appears intuitive, the problem with SEPs is, that in practice **truly "equivalent" licenses often will be hard to find**
- And even if there is, the question still is, whether the comparable solutions allows the **same kind of synergies** as the SEPs in question



The TDA depends on several assumptions regarding the single SEP's contribution to a product's value

4 Top-down approach (TDA)

- TDA is based on the assumption that a FRAND compliant license fee can be calculated by determining individual contributions of different SEPs to a specific product
- Determining and allocating added product value to the use of one SEP is difficult to begin with
- TDA is usually used only as a supplement or as a tool in order to correct evidently wrong outcomes



The CBA is ‘fair’ because it ensures the full coverage of costs, but how to determine the costs of a single patent?

5 Cost-based approach (CBA)

- CBA claims that licensing of SEPs must provide the right holder with a reimbursement of its costs plus an adequate return on invest over the patent term
- Methodology:
  1. Estimation of average total cost per patent
  2. Determination of appropriate return
  3. Estimation of usage figures
  4. Calculation of royalty

Given the high-risk profile of R&D expenditures in the field of SEPs, determining an ‘appropriate return’ may be challenging

5 Cost-based approach (CBA)

1 Estimation of average total cost per patent

- Must include all cost components necessary for the development of the patentable invention as well as the patent application and maintenance.
- Accurate cost attribution to one single patent very difficult

2 Determination of appropriate return

- Based upon investors’ return requirements
- Invest in R&D expected returns at least as high as of alternative investment options
- $$WACC = \frac{Equity}{Equity+Debt}\ Cost\ of\ Equity + \frac{Debt}{Equity+Debt}\ Cost\ of\ Debt\ (1\ - Tax\ Rate)$$
- $$Cost\ of\ Equity = Riskfree\ Rate + Beta(Market\ Return\ - Riskfree\ Rate)$$

Given the high-risk profile of R&D expenditures in the field of SEPs, determining an ‘appropriate return’ may be challenging

5 Cost-based approach (CBA)

3 Estimation of usage figures

- Important variable as it affects the total amount of royalties paid to patent holder
- Necessary to determine products in which patented technologies will be used
  → Utilize market research data on past and expected future sales figures

4 Determination of Unit Royalty

- Unit Royalty = (Cost per Year + Reasonable Return) / Usage Figure per Year

Summary – patent pools might be a key factor to successfully manage patent licensing in a more and more complex system

1. The IP environment with **differing legislation** for every technology and country adds **enormous complexity** to the licensing of patents. This complexity **challenges car manufacturers** and makes licensing difficult.

2. **FRAND terms** should be used **to meet the interests of the licensees' and SEP owners**. However, there are **still debates** on the question of how FRAND terms can actually be determined.

3. Patent pools will be a necessary instrument for licensing since the number of **bilateral negotiations** becomes to high. Collective action and a **simplification of the process** are necessary to ensure a feasible licensing system.

Thank you!