EC Study on the interplay between standards and intellectual property rights (IPRs)

Preliminary Results

Open Workshop organised by DG Enterprise of the European Commission
Charlemagne Building, Room Lord Jenkins, 170 rue de la Loi, 1040 Brussels
November 23th 2010
Agenda

10.00 Introduction by EC DG Enterprise

10.10 General Introduction into the Study

10.20 IPRs in Standards: A Quantitative Analysis
   IPR Policies
   Essential Patents and Standards including Essential Patents
   Characteristics of Essential Patent Owning Companies

10.50 Views of the Stakeholders about Processes and Impacts
   Results of Company Survey
   Insights from Company Interviews

11.50 Results of the Legal and Trend Analysis

12.00 Main Findings and Possible Implications

12.10 Open Discussion

12.45 Summary of Discussion

13.00 End of Workshop
Tasks

1. Fact-finding, quantification and descriptive analysis of the current situation and trends regarding the inclusion of IPR protected elements in standardisation from an international perspective.

2. Fact-finding, quantification and analysis of the current situation and trends of the economic impact of IPRs included in standards.

3. Fact-finding, quantification and analysis of the current situation and trends regarding actual issues arisen from the introduction of IPR protected elements in standards and their use. These issues shall include situations where consensus in the standardsmaking process was difficult or lacking, use of standards is limited, and in cases of commercial and legal dispute between different stakeholders.

4. Analyse the current situation and trends of IPR policies of governments, of relevant standards organisations and of business, as well as the legal practice of stakeholders in different sectors, economic areas and legal environments; develop an explanation for the variations in type and the recurrence of issues in 3 according to the elements in 4 where appropriate.

5. Following the analysis in 4, identify the main issues to be addressed by private and public stakeholders in order to improve the interplay of standards and IPRs, and propose solutions building on already observed practice.
Team

FhG: Knut Blind (Project leader) plus TU Berlin staff
    Tim Pohlmann and Florian Köhler

Dialogic: Rudi Bekkers (Senior Researcher) and Jurgen Verweijen
    and Stein Smeets (Junior researchers)

NIFU-STEP: Eric Iversen (Senior Researcher)

Consultant: Benoît Müller (Legal Expert)

Consultant: Yann Dietrich (Legal Expert)
Workpackages

WP0: Literature review
WP1: Quantitative analysis of available data
WP2: In-depth interviews
WP3: Company survey
WP4: Legal/industrial materials analysis / legal cases review
WP5: Overall analysis & recommendations
WP6: Project management
Objective of the Workshop

• Presentation of the preliminary study results
• Discussion and validation of preliminary findings
• Identification of main issues to be addressed in the future
• Identification and discussion of possible future solutions
Economic benefits of IPRs in standards

• Incentive function
  - leveraging temporary monopoly of IPR integrated in standards
  - incentive for investment in R&D complementary to a platform standard
  - pooling of IPR into standards reduces transaction costs for implementers
  - realisation of economies of scale (variety reduction) and positive network externalities

• Diffusion function
  - freer use of protected technologies (depending on the licensing regime)
  - diffusion already during the standardisation process and eventually with the publication of standards

• Coordination function
  - significant restriction of parallel developments of standards
  - allowing transition from old to new technologies
  - reducing inefficiencies of too rapid transitions to new technologies
IPRs in Standards: A Quantitative Analysis

- IPR Policies
- Essential Patents and Standards including Essential Patents
- Characteristics of Essential Patent Owners
IPR policies

• We analysed a certain number of IPR policies with the objectives to understand the main features of such IPR policies and as well potential issues to be flagged for further considerations.

• This analysis has been made only on a sample of IPR policies without being exhaustive and without the weight of such organisation being taken into consideration, both in terms of number of standards/specifications produced by such organisations but as well in terms of importance in the market of such standards/specifications (e.g. number of implementations/products).

• The following IPR policies have been analysed: ANSI, Broadband Forum, CCSA, CEN/CENELEC, DVB, ECMA, ETSI, IEC, IEEE, IETF, ISO, ITU-T, JEDEC, MIPI, OASIS, OMA, TIA, UN/CEFACT, VESA, W3C, Wifi Alliance, ZIGBEE.
Patent disclosure model

Nature of the obligation of disclosure in disclosure-based organisation

- 1 - Mandatory (use of words such as shall or must)
- 2 - Invitation
- 3 - No definitive conclusion without interpretation

When the patent disclosure is mandatory, presence of a disclaimer of corporate patent searches

- No disclaimer
- Clear disclaimer that no obligation to conduct patent search

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Preliminary Results
Patent disclosure

When the patent disclosure is mandatory, what is the scope of such disclosure?

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>limited to the knowledge of the individuals/members</td>
<td>4</td>
</tr>
<tr>
<td>no limitation to the individuals participating to the</td>
<td>2</td>
</tr>
</tbody>
</table>

Procedure to foster patent disclosure in all organisation

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - Obligation for chairman of WG to call for patents</td>
<td>9,5</td>
</tr>
<tr>
<td>declaration/exclusion</td>
<td></td>
</tr>
<tr>
<td>2 - others procedures</td>
<td>13</td>
</tr>
<tr>
<td>3 - No obligation</td>
<td>1,5</td>
</tr>
</tbody>
</table>

Personal & Technical scope of the disclosure obligation

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>limited to the knowledge of the individuals/members</td>
<td>17,5</td>
</tr>
<tr>
<td>no limitation to the individuals participating to the</td>
<td>6,5</td>
</tr>
<tr>
<td>the WG</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Option</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 - limited to the knowledge of the individuals/members</td>
<td>20,5</td>
</tr>
<tr>
<td>2 - no limitation to the individuals participating to the</td>
<td>3,5</td>
</tr>
<tr>
<td>the WG</td>
<td></td>
</tr>
</tbody>
</table>

1 - limited to the contribution of the company

2 - the complete relevant standard
Preliminary Results

It needs to be strongly reminded here of the inherent limitation of such analysis which is only based on a sample of IPR policies and do not take into account the importance of any organisation in terms of standards/specification production and/or the economic impacts of such standards/specifications.
Patent licensing

Irrevocability of the licensing commitments

- Clear usage of the word irrevocable: 5
- No clear indication of the irrevocable nature: 19

Definition of reciprocity

- Clear definition of reciprocity: 1
- Wide or not defined: 9
- No provision: 2
- Prohibition: 11

Geographical scope of the licensing obligation

- Commitment to license worldwide: 12
- No mandatory provision: 12

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**Patent licensing**

**Disclosure of Licensing terms**

- Voluntary disclosure of licensing terms authorized: 4
- Specific prohibition: 1
- Absence of provisions: 19

**Transfer of essential patents to a 3rd Party**

- Obligation to transfer such obligation: 4
- Obligation to notify such obligation to the acquiror: 4.5
- Not addressed: 15.5
Copyright licensing

Copyright provisions

Scope of the licensing/assignment of copyright

Technical fields of IPR policies including copyright license/assignment for software implementations

1 - IT/software (internet, cryptography …)
2 - Telecommunications (communications standards, network management)
3 - Consumers electronics (audio, video standards)
4 - Device (memory, bus, processor…)
5 - others

Publication of standards
Publication and Software implementation
Summary of IPR Policies

• While the limitations of such study need to be emphasised again, such work being made only on a sample of IPR policies and not taking into account the importance of any organisation in terms of standards/specification production and/or the economic impacts of such standards/specifications, these data may be helpful to flag certain potential issues to be addressed and/or to understand certain trends:

• **About patent disclosure**, a balanced approach seems to have been found with strong requirement to disclose all essential patents related to the standard/specification (and not limited to those related to the contribution) tempered by a disclaimer that no corporate search is required and/or a limitation of such obligation to individual/members participating to the working group.

• **About patent licensing commitments**, it would been interesting to raise awareness within standards organisations and foras about certain results related to the irrevocability of the licensing commitment, the geographical scope, the definition of reciprocity, the transfer to a 3rd party of essential patents to collect further thoughts about their importance in the context of their IPR policies and investigate further whether they should consider evolutions of such policies.

• **About the copyright licensing commitments**, it is interesting to notice that a large proportion of IPR policies have comprehensive policies addressing all aspects, including software implementations.
### Quantitative analysis of IPR databases: TOC

<table>
<thead>
<tr>
<th>Category</th>
<th>Data Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSO comparison</td>
<td># patents claimed</td>
</tr>
<tr>
<td>Standards comparison</td>
<td># patents claimed</td>
</tr>
<tr>
<td>World region ('home region of claimant)</td>
<td># firms</td>
</tr>
<tr>
<td></td>
<td># patents claimed</td>
</tr>
<tr>
<td>Patent technology fields</td>
<td># patents claimed, propensity</td>
</tr>
<tr>
<td>Dates</td>
<td>patent filing</td>
</tr>
<tr>
<td></td>
<td>FRAND submission</td>
</tr>
<tr>
<td>Firms</td>
<td># patents claimed, propensity</td>
</tr>
<tr>
<td></td>
<td>main economic activity</td>
</tr>
<tr>
<td></td>
<td># employees</td>
</tr>
<tr>
<td></td>
<td>R&amp;D expenditure</td>
</tr>
<tr>
<td></td>
<td>business model</td>
</tr>
</tbody>
</table>

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Preliminary Results
Data preparation and cleaning process

- IPR databases of SSO’s are most tangible form of patents in standards
- Usual disclaimers apply
- In dialogue with the EC, 11 SSO’s were selected
- Retrieved all EPO and USPTO patents, intensive data cleaning process
  - Geo overlap, standards overlap, SSO overlap, name harmonisation, multiple owners, matching application and patent, etc.
- Ultimate aim: link all single claims with PATSTAT identities
  - Allowing us to link with patent metadata
  - Allowing us to analyze patent families
### Patent indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total patents claimed</td>
<td>Includes all claims concerning USPTO or EPO patents we could find, even if they failed to provide specific information such as patent or application number.</td>
</tr>
<tr>
<td>Identified patents in PATSTAT</td>
<td>Those of the above patents or patent applications that could be identified within the PATSTAT database.</td>
</tr>
<tr>
<td>Patents according to ‘RealFamilies’</td>
<td>The same set as above, but filtered for duplicate patents filed in different legislations. As we believe that this number best represents the actual patent situation, we will refer to this one the most often.</td>
</tr>
<tr>
<td>Unique patent families (INPADOC)</td>
<td>The number of unique patent families, according to the data of the International Patent Documentation Center (INPADOC); a database is produced and maintained by the European Patent Office (EPO). This is the number that comes closest to a ‘single invention’.</td>
</tr>
</tbody>
</table>
## Claimed essential patents by SSO

<table>
<thead>
<tr>
<th>SSO</th>
<th>Total patents claimed</th>
<th>Identified patents in PATSTAT</th>
<th>Patents according to ‘RealFamilies’</th>
<th>Unique patent families (INPADOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>BBForum</td>
<td>36</td>
<td>26</td>
<td>25</td>
<td>13</td>
</tr>
<tr>
<td>CEN</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>CENELEC</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>ETSI</td>
<td>5649</td>
<td>5054</td>
<td>4212</td>
<td>2715</td>
</tr>
<tr>
<td>IEC</td>
<td>96</td>
<td>91</td>
<td>91</td>
<td>88</td>
</tr>
<tr>
<td>IEEE</td>
<td>622</td>
<td>559</td>
<td>527</td>
<td>414</td>
</tr>
<tr>
<td>IETF</td>
<td>271</td>
<td>255</td>
<td>249</td>
<td>197</td>
</tr>
<tr>
<td>ISO</td>
<td>47</td>
<td>45</td>
<td>43</td>
<td>37</td>
</tr>
<tr>
<td>ITU</td>
<td>575</td>
<td>496</td>
<td>477</td>
<td>408</td>
</tr>
<tr>
<td>ISO/IEC JTC 1</td>
<td>267</td>
<td>243</td>
<td>219</td>
<td>188</td>
</tr>
<tr>
<td>OMA</td>
<td>407</td>
<td>364</td>
<td>347</td>
<td>265</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7976</strong></td>
<td><strong>7139</strong></td>
<td><strong>6196</strong></td>
<td><strong>4331</strong></td>
</tr>
</tbody>
</table>
### Claimed essential patents of all standards with 100 or more claimed USPTO or EPO patents

<table>
<thead>
<tr>
<th>Standard (coded)</th>
<th>Total patents claimed</th>
<th>Identified patents in PATSTAT</th>
<th>Patents according to ‘RealFamilies’</th>
<th>Unique patent families (INPADOC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UMTS</td>
<td>2864</td>
<td>2597</td>
<td>2128</td>
<td>1605</td>
</tr>
<tr>
<td>GSM</td>
<td>1333</td>
<td>1259</td>
<td>966</td>
<td>756</td>
</tr>
<tr>
<td>LTE</td>
<td>866</td>
<td>646</td>
<td>642</td>
<td>562</td>
</tr>
<tr>
<td>OMA standards</td>
<td>408</td>
<td>365</td>
<td>348</td>
<td>266</td>
</tr>
<tr>
<td>IETF standards</td>
<td>271</td>
<td>255</td>
<td>249</td>
<td>197</td>
</tr>
<tr>
<td>IEEE 802.16 Broadband Wireless Metropolitan Area Network (&quot;WiMax&quot;)</td>
<td>165</td>
<td>152</td>
<td>137</td>
<td>105</td>
</tr>
<tr>
<td>JTC RFID (Radio Frequency Identification for Item Management)</td>
<td>143</td>
<td>133</td>
<td>116</td>
<td>78</td>
</tr>
<tr>
<td>IEEE 802.11 Wireless LAN (aka &quot;WiFi&quot;)</td>
<td>136</td>
<td>126</td>
<td>116</td>
<td>98</td>
</tr>
</tbody>
</table>
### Standards with IPR: four ‘leagues’

<table>
<thead>
<tr>
<th>League</th>
<th>Examples</th>
<th>Typical no of patents</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Telecom and IT</td>
<td>GSM, UMTS, LTE, WiFi</td>
<td>&gt;100 (seven standards) &lt;100 (another 20)</td>
</tr>
<tr>
<td>2. IT and consumer electronics</td>
<td>Video coding, DVB, FireWire</td>
<td>Mostly 20 – 100 patents</td>
</tr>
<tr>
<td>3. Enabling technologies</td>
<td>RFID, ‘agricultural electronics identification’</td>
<td>&gt;100 (one standard) 1-20 patents (few others)</td>
</tr>
<tr>
<td>4. ‘genuine’ non-ICT related standards</td>
<td>Very few</td>
<td>Very few</td>
</tr>
</tbody>
</table>

Note: number of essential patents DOES NOT equal impact!!
Claimants and claimed patents by world region (313 firms)
Number of claimants by world region / country (278 firms)
Size categories of claimants by world region / country (278 firms)
Size categories of claimants by world region / country (relative)

- **US**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents

- **Europe**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents

- **JP**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents

- **Israel**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents

- **Asia (excl. Japan)**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents

- **CA**:
  - 1 claimed essential patents
  - 2-4 claimed essential patents
  - 5-9 claimed essential patents
  - 10-49 claimed essential patents
  - 50-99 claimed essential patents
  - 100-199 claimed essential patents
  - >300 claimed essential patents
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Filing date of claimed essential patents by largest standards (on basis of RealFamilies)
Total declarations (incl. duplications) and standard projects with over 1000 declarations
### Patent propensity in technology classes (IPC)

<table>
<thead>
<tr>
<th>IPC class</th>
<th>Number of essential patents</th>
<th>Number of patent grants at USPTO (Worldwide, 1980-2007)</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>H04L - Transmission of digital information, e.g. telegraphic communication</td>
<td>1364</td>
<td>55815</td>
<td>2.44%</td>
</tr>
<tr>
<td>H04B - Transmission</td>
<td>1356</td>
<td>30327</td>
<td>4.47%</td>
</tr>
<tr>
<td>H04Q - Selecting</td>
<td>1308</td>
<td>10749</td>
<td>12.17%</td>
</tr>
<tr>
<td>H04J - Multiplex communication</td>
<td>633</td>
<td>8947</td>
<td>7.08%</td>
</tr>
<tr>
<td>G06F - Electric digital data processing</td>
<td>432</td>
<td>158325</td>
<td>0.27%</td>
</tr>
<tr>
<td>G10L - Speech analysis or synthesis; speech recognition</td>
<td>363</td>
<td>7166</td>
<td>5.07%</td>
</tr>
<tr>
<td>H03M - Coding; decoding or code conversion, in general</td>
<td>235</td>
<td>13307</td>
<td>1.77%</td>
</tr>
<tr>
<td>H04M - Telephonic communication</td>
<td>225</td>
<td>23197</td>
<td>0.97%</td>
</tr>
<tr>
<td>G01S - Radio direction-finding; radio navigation; determining distance or velocity by use of radio waves; locating or presence-detecting by use of the reflection or reradiation of radio waves; analogous arrangements using other waves</td>
<td>208</td>
<td>14617</td>
<td>1.42%</td>
</tr>
<tr>
<td>H04N - Pictorial communication, e.g. Television</td>
<td>202</td>
<td>64153</td>
<td>0.31%</td>
</tr>
<tr>
<td>G06K - Recognition of data; presentation of data; record carriers; handling record carriers</td>
<td>166</td>
<td>22701</td>
<td>0.73%</td>
</tr>
<tr>
<td>G06T - Image data processing or generation, in general</td>
<td>73</td>
<td>18204</td>
<td>0.40%</td>
</tr>
<tr>
<td>Claiming company</td>
<td>Total patents claimed</td>
<td>Identified patents in PATSTAT</td>
<td>Patents according to RealFamilies</td>
</tr>
<tr>
<td>------------------</td>
<td>-----------------------</td>
<td>-------------------------------</td>
<td>----------------------------------</td>
</tr>
<tr>
<td>Nokia</td>
<td>1480</td>
<td>1330</td>
<td>1076</td>
</tr>
<tr>
<td>Qualcomm</td>
<td>1284</td>
<td>1145</td>
<td>950</td>
</tr>
<tr>
<td>InterDigital</td>
<td>986</td>
<td>769</td>
<td>713</td>
</tr>
<tr>
<td>Ericsson</td>
<td>553</td>
<td>540</td>
<td>455</td>
</tr>
<tr>
<td>Motorola</td>
<td>319</td>
<td>310</td>
<td>250</td>
</tr>
<tr>
<td>Siemens</td>
<td>196</td>
<td>185</td>
<td>151</td>
</tr>
<tr>
<td>LG Electronics</td>
<td>188</td>
<td>128</td>
<td>126</td>
</tr>
<tr>
<td>Nortel Networks</td>
<td>170</td>
<td>152</td>
<td>136</td>
</tr>
<tr>
<td>AlcatelLucent</td>
<td>168</td>
<td>159</td>
<td>123</td>
</tr>
<tr>
<td>Samsung Electronics</td>
<td>115</td>
<td>100</td>
<td>88</td>
</tr>
<tr>
<td>Philips</td>
<td>102</td>
<td>100</td>
<td>73</td>
</tr>
</tbody>
</table>
How many patents of a given firms are claimed essential?

Essential patent families in relation to overall number of patent families in relevant IPC classes

- Nokia: 8.51%
- Qualcomm: 16.47%
- Ericsson: 5.23%
- InterDigital: 45.50%
- Motorola: 4.12%
- Siemens: 1.17%
- LG Electronics: 4.85%
- AlcatelLucent: 1.21%
- Nortel Networks: 5.53%
- Samsung Electronics: 1.28%
- Philips: 0.64%
Main economic activity (SIC-code) of 217 IPR-owning firms

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Total number of employees of 217 IPR-owning firms

- 250-5k: 31%
- 10k-50k: 24%
- 5k-10k: 8%
- 10k-150k: 17%
- 0-250: 12%
- 150k-300k: 6%
- >300k: 2%
R&D expenditures as percentage of total revenues of 217 IPR-owning firms

- More than 20%
- Less than 3.5%
- From 3.5% to 8.5%
- From 8.5% to 20%
Business models as to number of essential patents (N=217)

- Manufacturer: 63%
- Non-producing entity: 31%
- Network provider: 6%
IPRs in Standards: A Quantitative Analysis: Summary

- Concentration of essential patents
  - in specific fields of technology
  - in specific standards and SSOs
  - owned by a limited number of companies from U.S., Europe and Japan, but new players from emerging countries currently entering the scene
  - …. however, numbers of patents do not equal impact!

- after the peaks of claiming essential patents around the development of the GSM and UMTS standards, stagnation (even reduction) of declarations

- Companies owning essential patents are
  - large companies mainly active in the ICT industry
  - diverse R&D spendings
  - are mainly manufacturers (73%), but the 6% Non-producing entities claim to own 31% of the essential patents by having large shares of essential patents in their total patent portfolio
Results of Company Survey
Structure of Preliminary Survey Results

- Basis more than 140 answers collected by directly addressing companies owning essential patents and standards users via IEC, ESOs and various NSBs

- Structure of the survey:
  - Part 1: Importance of IPRs in standards
  - Part 2: Access to essential IPRs
  - Part 3: Impact of IPRs in standards on the standardisation process, the implementation of standards and on general aspects of your company
  - Part 4: SSO policies and mechanisms
  - Part 5: Future Trends

- Overall answers and differentiation between Owners of Essential IPRs and Others
Share of owners of essential IPRs among respondents to survey

Does your company own essential IPRs?

- no
- yes

Percent

Preliminary Results
Aspects of owning essential IPRs

How important are the following aspects of owning essential IPRs to your enterprise? (1 = very unimportant, 5 = very important)

- Securing freedom to operate / reducing risk of being accused of infringing
- Signalling own technological competencies
- Facilitating own market entry
- Entering into cross-licensing agreements / increasing bargaining power in licensing negotiations (e.g. for lowering or eliminating license fees)
- Influencing technological trajectory or standards competition
- Joining patent pools / increase bargaining position in patent pools
- Generating licensing revenue

freedom to operate and signalling are the most important motives to own essential IPRs, but depends on business model.
Mechanisms to get access to essential IPRs

How often, if at all, are the following mechanisms offered to you by other organisations and actually accepted by you regarding access to their essential IPRs?
(1 = never, 5 = always)

- Licensing in
- Patents my company needs are available against royalty-free conditions
- No explicit license agreements
- Cross-licenses
- Non-assertion agreements
- Patent pool (multi-lateral) licensing in

relative to other ways patents are available under RF conditions, but depends on size of companies’ patent portfolio.
Mechanisms to offer essential IPRs

How often do you successfully offer the following mechanisms to other organisations regarding your own essential IPRs?
(1 = never, 5 = always)

- Licensing out
- No explicit license agreements, but knowing that the other party also uses our IPRs we both do not assert
- Patents my enterprise licenses out are available against royalty-free conditions
- Cross-licenses
- Non-assertion agreements
- Patent pool (multi-lateral) licensing out

no difference and little change between licensing out, no explicit and RF agreements and cross licensing
Licensing conditions for a company without IPRs

(Please assume a (hypothetical) entrant into the market you have chosen above. This party is an existing, experienced medium-sized production enterprise, but does not own relevant (essential or non-essential) IPRs concerning the standard or market you indicated. Given reasonable bargaining skills, what aggregate licensing fee would such an enterprise have to pay?)

- All patents typically licensed for the product marked in question
  - Lower-end estimate
  - Higher-end estimate

- Only essential IPRs
  - Lower-end estimate
  - Higher-end estimate

no differences in assessment of licensing conditions for essential IPRs and other IPRs
Confidentiality of assessment of licensing conditions

Can you indicate how certain you are of your answer to the above question? (in %)

- very certain
- certain
- neutral
- uncertain
- very uncertain

Other  Essential IPR owner

high uncertainty especially among IPR owners
Impacts of essential IPRs on standardisation

How does or would (in case of not owning essential IPRs) the inclusion of essential IPRs in standards affect the following aspects of the standardisation process? Please differentiate between FRAND and RF settings!
(1 = very negative, 5 = very positive)

- The inclusion of attractive technologies (high performance, cost saving, etc.)
- Number of non producing entities (providing technology, but not producing goods) involved in standardisation processes
- Number of potential implementors participating in the standardisation processes
- Consensus reaching
- Speed of the standardisation process

Neutral impacts under RF, but slightly critical impacts under FRAND consensus on RF, but dissent on FRAND (more favoured by IPR owners)
Impacts of essential IPRs on implementation of standards

How does the inclusion of essential IPRs in a standard by other enterprises affect the following aspects of the implementation of that standard by your enterprise? Please differentiate between FRAND and RF settings!
(1 = very negative, 5 = very positive)

- Savings of own R&D investment
- Possibility of integrating high quality technologies in own products
- Effectiveness to identify relevant IPR rights owners
- Legal security related to IPRs (e.g. avoiding unintended infringements)
- General speed of implementation of standards
- Competitiveness in existing markets
- Ability to entry in new markets
- Sum of licensing fees
- Negotiation cost of licensing conditions

neural or even slightly positive impacts under RF, but slightly critical impacts under FRAND

neutral or even slightly positive impacts under RF, but slightly critical impacts under FRAND consensus on RF, but dissent on FRAND (more favoured by IPR owners)
Impacts of essential IPRs on company in general

<table>
<thead>
<tr>
<th>Aspect</th>
<th>RF</th>
<th>FRAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patenting activities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment in R&amp;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market shares of own standard-based products</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Entering into new technology and product markets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total cost price of own standard-based products</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

How does the inclusion of your essential IPRs in standards affect the following general aspects of your enterprise? Please differentiate between FRAND and RF settings! (1 = very negative, 5 = very positive)

neutral impacts under RF and no significant differences to FRAND consensus on RF, but dissent on FRAND (more favoured by IPR owners related to patenting and R&D)
Assessment of SSOs

How do you rate the different types of SSOs regarding the following aspects:
(1 = very unsatisfactory, 5 = very satisfactory)

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Formal (e.g. CEN-CENELEC, ETSI, ISO, IEC, ITU, national standards bodies)</th>
<th>Other SSOs (incl. consortia and fora, e.g. IEEE, IETF, OASIS, OMA, W3C)</th>
</tr>
</thead>
<tbody>
<tr>
<td>The general attractiveness of the current IPR policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>The efforts to adapt the IPR policy to future developments</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harmonisation with IPR policies and practice of other SSOs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Transparency on which patents are deemed essential by their owners</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

slightly critical and controversial assessment of formal SSOs (more positive by IPR owners, critical by others favouring RF), but consensus on average performance of other SSOs
Future Tasks for SSOs

Please indicate whether SSOs should perform the following activities in the future?
(1 = totally disagree, 5 = totally agree)

- Screening the problems related to the implementation of standards during the process
- Providing for a mediation process for IPR-related conflicts during the standardisation process
- Defining how RAND should be interpreted
- Judging upon essentiality
- Allowing voluntary ex-ante declarations of licensing fees
- Promoting voluntary ex-ante declarations of licensing fees
- Requiring obligatory ex-ante declarations of licensing fees
- IPR (patent) landscaping
- Mediating conflicts (e.g., patent infringement) on the implementation of standards
- Patent-pool administration
- Technology auctioning

Other
Essential IPR owner

but:
little change and consensus on future tasks for SSOs
**Trends within the next 5 years**

To what degree do you expect the following trends to develop within the next 5 years and how desirable do you think they are? (1 = unlikely/undesirable, 3 = likely/desirable)

<table>
<thead>
<tr>
<th>Trend</th>
<th>Expected</th>
<th>Desired</th>
</tr>
</thead>
<tbody>
<tr>
<td>The presence of third-party non-producing entities as owners of essential IPRs</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>An increase in geographical diversity of participants in standardisation</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>An increase in geographical diversity of IPR rightsholders</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Increased number of standards based on open source software</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>An increase in the number of rights holders per standard</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Trading of essential IPRs</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Licensor targeting entities downstream in the value chain (e.g. operators, system-integrators)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Activities of governments related to IPR policies</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Increasing relevance of copyrights as an essential IPR</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Delayed disclosure of IPRs essential for the implementation of standards</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Substitution of FRAND by RF</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Numerous and mostly undesirable changes expected.
Results of Company Survey: Summary I

- only small share of implemented standards covered by essential IPRs
- freedom to operate and signalling most important for owning essential IPRs
- licensing, no agreements and RF use of IPRs in standards most common for accessing and offering essential IPRs with little change in the last years
- difficulty to assess average licensing conditions and no differences between essential and other IPRs
- neutral impact of RF, but slightly critical impacts of FRAND on standardisation, but dissent on FRAND more favoured by IPR owners
- neutral or even slightly positive impacts on the implementation of standards under RF, but slightly critical and disputable impacts under FRAND
- overall neutral impacts on companies (R&D, patenting, etc.) under RF and no big differences to FRAND (more critical for entry, market shares and costs)
- in summary: RF obviously preferred by companies without essential IPRs, but also no dissent with IPR owners
Results of Company Survey: Summary II

• slightly critical and controversial assessment of IPR policies of formal SSOs (especially by non IPR owners), but consensus on average performance of other SSOs

• but: little change and consensus on future tasks for SSOs, but
  - more active role in screening the possible problems with the implementation of standards
  - mediating process for IPR-related conflicts
  - help for the interpretation of FRAND

• most severe problems in the future will be the entry of non-producing entities, more rights-holders per standards and licensors

• more standards will and should be based on open source software

• in summary: the system works in general, but challenge to find the right “price” for IPRs in standards
Insights from Company Interviews
Company in-depth interviews

Firms that were interviewed:

- AlcatelLucent
- Cisco
- Ericsson
- Harting
- Hitashi
- IBM
- Infineon
- Microsoft
- Mitsubishi
- Nanotron
- Nokia
- Philips
- Qualcomm
- Siemens
- Toshiba
- Eric Stasik (expert)
Company in-depth interviews

• Our findings are (re)grouped into 5 main topics:

  1. Factual information and quantification of IPRs in standards
  2. Impact of IPRs in standards
  3. IPR policies at SSOs and proposed changes
  4. Patent pools, non-assert agreement, etc.
  5. Disputes (incl. NOKIA Case)
Factual information and quantification of IPRs in standards

- Growth of IPRs in patents partly explained by ‘global patent warming’ and explicit patenting strategies
- Some firms have more ‘bloated’ patent portfolios than others but on the longer term many firms feel obliged to adopt such strategies
- Quantification is informative, but may not help identify the most important issues. ‘The number of patent or patent owners not that important, it is more important what these owners are intending to do with their patents’.
- Large amount of over claiming (2:1), with various causes and high degree of uncertainty
- Bodies with ‘weak’ IPR policies have higher degree of over claiming
- Number of patent owners increase with (1) complexity of standard, (2) market volume, (3) success and new generations
Factual information and quantification of IPRs in standards

- R&D (and resulting patents) have been taking place around the globe for many years. However, change from regional to global relevance of standards.
- Role of universities as patent owners is growing (and trend not to transfer it)
- Over time, growing relevance from Japan, then South Korea, now China.
  - “China will dominate the patent landscape in ICT by 2012”
  - “Domestic applications overtook foreign applications in 2003”
  - “China has got a 9 % share of worldwide telecommunications patents now (5th worldwide)”
- Non-patent IPR is believed to be relatively insignificant
- Growth areas: Instant health care; Lighting (incl. LED); Powering electric vehicles; Smart grids.
Impact of IPRs in standards

Financial flows

Impact

Entry & exit

Effects

Innovation

Adoption / uptake
Impact of IPRs in standards

• Hard to talk about ‘averages’ in licensing burden because:
  - Licensing base varies strongly (CE or coding often per-unit fee; 2G/3G often percentage of wholesale value, etc.)
  - Large variation in agreements (coverage, portfolio’s, cross-licensing, time periods, capture periods, payments, geographical footprint, non-essential patents, ‘picks’, etc.)
  - Patents and portfolios differ in value
  - For different type of players, licensing and royalty revenues serve different goals
  - In real life, firms often obtain licenses only from a selection of actual IPR holders

• In mobile, cross-licensing is common (may even be quite attractive for some smaller players)
• In IT (excluding telecom), parties often do not explicitly license each other
Impact of IPRs in standards

Some evidence of non-assert agreements, in different forms. Nuanced differences with CL (e.g. no exhaustion)
Impact of IPRs in standards

Common aggregate royalty rates for mobile telecommunications devices.

- GSM, no cross licensing: Typical 8%
- GSM, cross licensing: Typical 4%
- GSM/UMTS, no cross licensing: Typical 12%
- GSM/UMTS, cross licensing: Typical 9%
- TLE (only), no cross licensing: Typical 11%?
Impact of IPRs in standards

• Effect on entry and exit: interestingly, interviewees used the same example to illustrate opposite views
  1. “entry is not at all impeded”
  2. “entry is limited to certain category of players”

- Most agree that FRAND is generally well respected. However: “FRAND does not exclude a significant fee – parties buy knowledge and access to a market and may be expected to pay for this.”

• Innovation: hard to say. Internet showed unprecedented boost with RF
• Adoption: The common fee calculation models worked for homogeneous product categories but create obstacles for integration in other devices (smart phones, tablet computers, laptops, m2m, cars)
Impact of IPRs in standards

• Significance of non-essential patents (‘implementation patents’) is increasing. Various reasons.

• Divergent views on effect of convergence.

• Interestingly: convergence creates problems for small specialist component (chip) suppliers as the functionalities they offer are integrated into main chipsets.
IPR policies at SSOs and proposed changes

• Only few known cases where patents inhibited standardization process. On the contrary, patents often provide incentives to make good technology available.

• Differences between policies at SSOs are not so significant. Quite some disagreement what FRAND means (or should mean).

• Several positive reactions to RF and to SSOs with ‘menu’s’.

• Criticism on SSOs with ‘default’ FRAND policies with no need for notification.

• Transparency (esp. IPR databases) leaves much to be desired. ‘Inconsistent and incomplete’; ‘Radical improvements are needed’.

• While the ETSI requirements and the IPR database are the best around, they can certainly be improved. The planned reform is applauded.
IPR policies at SSOs and proposed changes

• View towards (voluntary) ex-ante licensing regimes is very dim. It underlying ‘theoretical’ advantages only come into fruition when there is a (a) real choice between (b) full alternatives for which the (c) performance and IPR costs can be well established and (d) where regular licensing dominates (no CL etc.). ‘Will not work for ex-ante standardisation.’ Remains unused at ETSI.

• Current LTE licensing announcements are non-information as they quote ‘upper bound’ percentages that are far from actual and sum up to an unrealistic amount. Also they are made after the technology inclusion process (ex-post), and they are only issued by a selection of IPR owners.
IPR policies at SSOs and proposed changes

Criticism on the technology inclusion process:

• ‘Some essential patents are really on basic technologies, but many are on futilities’. While they may be essential to the standard in literal sense, there would have been plenty other (non-patented) ways to achieve the same requirements.

• ‘Current process invokes ‘horse trading’ practices in which participants of Technical Committees allow each other to drive unnecessary patents into the standard, allowing the participants to build large essential IPR portfolios.’
IPR policies at SSOs and proposed changes

• Very few interviewees see need for policy intervention concerning SSOs or patents in standards. It’s a complex, delicate situation, intervention may fix one thing yet break ten others. Uncertainty on short and long term effects of policy changes.

• Also the role of SSOs and their policies should not be overestimated.

• A need is felt for changes in the (general) patent system. The increasingly loose grant criteria provoke opportunistic behaviour and create uncertainty

• Also legal doctrines for preliminary injunctions and so on require attention, though progress has been made (esp. in US). On the other hand, the ITC created yet a new arena
Patent pools, non-assert agreement, etc.

• Pools clearly have advantages:
  - Enable a process of finding reasonable (aggregate) licensing rates
  - Are fully compatible with FRAND
  - Prevent double marginalisation
  - Reduce transaction costs by one-stop shopping
  - May help to increase market size
  - Provide mechanism to check essentiality
  - Make sense for small patent owner for which royalty collection is no core business (e.g. universities)
Patent pools, non-assert agreement, etc.

- Pools work best well in ‘small’ defined areas

- Work best when there is common believe that the mere existence of a pool will increase market size, thus offsetting lower fees

- Less likely to succeed in complex large standards with many owners and varying business models. In 3G, pools are a side issue. Major players believe they have better bargaining position in bilateral talks and fear losing control

- Pool formation is a difficult process and requires lots of resources, especially to determine essentiality. Interesting especially if there is a large fragmented implementers market
Disputes

- Disputes are not unknown but should be seen as exception to the rule. Court actions are only started in cases of deep disagreement.

- Arbitration is rare. Settlements are common.

- Number of court cases is expected to increase. Reasons:
  - Newcomers increasingly unwilling to license essential patents
  - Companies with low value portfolios increasingly have overambitious expectations
Disputes

• Differences in legal regimes:
  - Court cases have helped to reduce some uncertainties (e.g. disclosure requirements) but failed to provide a good definition of FRAND.
  - In Asia, enforced damages are considered often far too low compared to actual suffers
  - UK is increasingly patent-hostile
  - German legal system provides loopholes making it interesting for infringement cases, particularly for trolls
IPR Litigation: The Nokia Case

• The main questions about which we attempted to collect literature and data are:

- While the number of patent litigation increased in general, we looked at data helping to understand better such increase.

- Understanding more recent trends based on contemporary decisions.

- Using the example Nokia patent litigation in US, we looked at data which may be helpful to understand the specifics of litigation involving non-essential patents vs. litigation involving potential essential patents, and especially whether we assist to an increase of litigation between what we called traditional companies vs. other types of opponents such as Non-producing entities, universities and individual inventors.
EC Study on the interplay between standards and intellectual property rights (IPRs)

Preliminary Results

Table 1 – Estimated volume and availability of actual cases in the data per country

<table>
<thead>
<tr>
<th>Availability rates for 2004-2009</th>
<th>BE</th>
<th>DE</th>
<th>ES</th>
<th>FR</th>
<th>GB</th>
<th>IT</th>
<th>NL</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean cases per year in 2004-2009</td>
<td>29</td>
<td>351</td>
<td>116</td>
<td>321</td>
<td>46</td>
<td>85</td>
<td>73</td>
<td>1020</td>
</tr>
<tr>
<td>including cases with no dates</td>
<td>30</td>
<td>399</td>
<td>131</td>
<td>328</td>
<td>49</td>
<td>106</td>
<td>78</td>
<td>1119</td>
</tr>
<tr>
<td>Practitioners estimates¹</td>
<td>700</td>
<td>200</td>
<td>85</td>
<td>70</td>
<td></td>
<td></td>
<td></td>
<td>1055</td>
</tr>
<tr>
<td>Availability rate according to practitioners</td>
<td>57.0</td>
<td>100.0</td>
<td>57.1</td>
<td>100.0</td>
<td></td>
<td></td>
<td></td>
<td>80.8</td>
</tr>
<tr>
<td>Availability rate according to data provider</td>
<td>60.0</td>
<td>50.0</td>
<td>60.0</td>
<td>90.0</td>
<td>70.0</td>
<td>90.0</td>
<td></td>
<td>65.0</td>
</tr>
<tr>
<td>Theoretical cases per year according to official availability rate</td>
<td>50</td>
<td>798</td>
<td>218</td>
<td>364</td>
<td>54</td>
<td>151</td>
<td>86</td>
<td>1720</td>
</tr>
<tr>
<td>Country share in EU7 total</td>
<td>2.9</td>
<td>46.4</td>
<td>12.6</td>
<td>21.2</td>
<td>3.1</td>
<td>8.8</td>
<td>5.0</td>
<td></td>
</tr>
</tbody>
</table>


This paper is based on Data from Darts-IP and also Harhoff, D. (2009) Economic cost-benefit analysis of a Unified and Integrated European Patent Litigation system

Table 10 – Overall outcome of infringement and invalidity actions by jurisdiction

<table>
<thead>
<tr>
<th>Country</th>
<th>Infringement found</th>
<th>Ambiguous</th>
<th>Patent invalid</th>
<th>Ambiguous</th>
</tr>
</thead>
<tbody>
<tr>
<td>France</td>
<td>41,8%</td>
<td>8,7%</td>
<td>23,4%</td>
<td>20,9%</td>
</tr>
<tr>
<td>Germany</td>
<td>52,3%</td>
<td>4,0%</td>
<td>37,0%</td>
<td>20,4%</td>
</tr>
<tr>
<td>Spain</td>
<td>41,3%</td>
<td>1,3%</td>
<td>48,3%</td>
<td>3,5%</td>
</tr>
<tr>
<td>The Netherlands</td>
<td>31,0%</td>
<td>1,1%</td>
<td>50,7%</td>
<td>11,3%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>44,9%</td>
<td>11,8%</td>
<td>32,8%</td>
<td>31,9%</td>
</tr>
<tr>
<td>Total</td>
<td>44,8%</td>
<td>6,7%</td>
<td>30,7%</td>
<td>20,3%</td>
</tr>
</tbody>
</table>


This paper is based on Data from Darts-IP and also Harhoff, D. (2009) Economic cost-benefit analysis of a Unified and Integrated European Patent Litigation system
Main trends

- **Essential patents and commitment to license at FRAND conditions**
  - Orange Book Decision
  - Philips vs. Kassetten
- **Essential patents & declaration of non-essentiaality**
  - Nokia vs. Interdigital (UK)
- **Essential patents and transfer to a 3rd party**
  - IPCOM vs. Nokia
- **Specifications/Standards as Prior art**
  - SRI international vs. Internet Security Systems
- **Essential patents and FRAND**
  - Nokia vs. Apple
Nokia patent litigation profile

• For United States, we analysed all the patent litigation in which Nokia was involved using the data available using the database created by Stanford University called Lex Machina as of June 1st 2010 (90 cases).

• For Europe, we received data from Nokia about 43 cases, many thanks to Nokia and especially Richard Vary for providing us with such data.
Nokia patent litigation profile

In US

- Plaintiff
- Defendant

10

80

2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010

Litigation per year per type of opponents

Litigation involving
NPEs, universities,
individual inventors

Litigation involving
traditional companies

In Europe

- Plaintiff
- Defendant

4

45

2003 2004 2005 2006 2007 2008 2009 2010

Litigation per year per type of opponents

Litigation involving
NPEs, universities,
individual inventors

Litigation involving
traditional companies

EC Study on the interplay between standards and intellectual property rights (IPRs)

Preliminary Results
EC Study on the interplay between standards and intellectual property rights (IPRs)

Preliminary Results

Nokia patent litigation profile

In US

Patent litigation involving potential essential patents

- Litigation involving NPEs, universities, individual inventors
- Litigation involving traditional companies

In Europe

Patent litigation involving potential essential patents

- Litigation involving NPEs, universities, individual inventors
- Litigation involving traditional companies
Nokia patent litigation profile

In US

Patent litigation per type of outcomes (excluding pending litigation, unclear outcome, and cases consolidated)

Average duration of settlement in days - based on lex machina data

In Europe

Patent litigation per type of outcomes (excluding pending litigation, unclear outcome, and cases consolidated)
Results of the Legal and Trend Analysis
Methodology

- Review industry, SSOs and other stakeholders contributions in recent debates on standards and IPRs
  - November 2008 DG Enterprise workshop
  - Commission White Paper on ICT standardisation policy
  - Discussions in ETSI/SSOs
  - EU policies
  - Literature
  - Case law
  - WIPO
  - Relevant public information
- Learn from other Work Packages
Output

• Views or trends in the following categories:
  - Voluntary, market-led standardisation
  - IPR licensing transparency and predictability
  - IPR licensing efficiency
  - Dispute resolution
  - Open standards and open source software
  - Standards and copyright
  - Standards and trademarks
  - Standardisation and prior art
  - Referencing standards in legislation, policies and procurement
  - Government intervention in standardisation

• Structured overview of standardisation stakeholders’ views on IPR-related issues

• No evaluation of the merit of arguments in favor or against any view
From views to trends

- Patents in standards is a reality in particular in technology driven industry sectors
- No overhaul of the voluntary, market-led standardisation system
- Protect IPRs also in standards, promote FRAND including RF
- Different business models and licensing options
- Clear and binding SSO IPR policies; prevent and monitor anti-competitive IPR abuses
- Updated and searchable SSO IPR databases
- Incentives for good faith IPR inquiries
- Safe harbor for ex ante disclosure of licensing terms
- Patent pools, cross-licensing, technology auctions, non-assert commitments
- Participation based models and / or royalty free licensing when appropriate
- Quality patents / European Patent / international harmonisation
- Globalisation of actors and technology convergence require global perspective
Divergent views / open questions

- Define FRAND; essentiality; other key terms? Benchmarks? Case by case assessment?
- Mediation and expert determination?
- FRAND licensing commitment passed on to new IPR holder?
- Worldwide FRAND licensing commitment?
- SSO – EPO / patent office cooperation?
- Injunctions / license of rights?
- Copyright policies / software guidelines?
- Support measures for SMEs?
- Reference standards in legislation, policies and / or procurement?
Main Findings and Possible Implications

- Strong concentration of patents in standards regarding
  - technologies: mainly ICT (wireless communication)
  - companies: mostly large players and some few SMEs incl. NPEs
- Decreasing referencing of patents in standards in contrast to perceived growing importance of patents (including non essential patents) in standards
- Extension to other fields outside ICT driven by ICT in other sectors (cars, energy, health) and only other single cases
- More companies due to the globalisation of R&D and organisations (like research organisations and NPEs) have entered the game
- Currently almost only patents are relevant, possible extension to other IPRs like copyright in the software area (already addressed by some SSOs) might play a more prominent role in the future
Main Findings and Possible Implications

• Owning essential patents is - like protecting IPR in general - crucial, but has multiple purposes like securing freedom to operate and signalling besides generating licensing revenues

• Access to essential IPRs mainly via licensing (often under RF conditions), patent pools and other forms are rather exceptions (also little change over time)

• Certain level of insecurity about average licensing terms of essential patents, but also no significant difference to patents being not essential

• On average RF makes in relation to FRAND standardisation process and implementation of standards easier, but FRAND provides for IPR owners stronger incentives for R&D, patenting and contributions to standardisation

• General agreement that the system works, but balance for licensing conditions has to be found
Main Findings and Possible Implications

- No significant differences in the perception of IPR owners regarding IPR policies between SSOs, standards users without IPR are generally comfortable with the policies of informal SSOs.
- SSOs should improve transparency, but not necessarily extend their activities regarding IPR in general, however taking care of implementation problems already in the standardisation process on a voluntary and member driven basis.
- Patent pools are solutions under specific conditions.
- Disputes are the exception, but might increase due to more players, transfers of IPRs and heterogeneous IPR regimes, but is often not specific to standardisation.
- Direct involvement of governments is not perceived as solution, e.g. imposing ex ante disclosure of licensing condition is not perceived as being helpful.
- Indirect influence of governments via public procurement and legislation is controversial among companies but considered by governments.
- In general, patent offices should improve patent quality.
Issues for Discussion

- Completeness of IPR policies
- Transparency
- Compliance to rules of IPR policies
- Sanctions
- Licensing conditions
- Feedback from standards implementation
- Role of government and other policy areas