

# NFC Patent Report (Part 1)

Using PatSeer to Search for Innovation around NFC (Near Field Communication) and to look at various trends across Companies, Inventors and their research

## Near Field Communication - Overview

- Near Field Communication technology is a contactless short-range communication similar to RFID technology. Based on the Radio Frequency Identification (RFID), it uses magnetic field induction to enable communication between electronic devices. It is a lower frequency technology primarily designed to carry out basic communication amongst devices and it operates at the frequency of 13.56 MHz accessible from a maximum distance of about 10 cm. With NFC technology, communication occurs when an NFC-compatible device is brought within a few centimeters of another NFC device or an NFC tag.
- As a short-range wireless connectivity technology, NFC offers secure and intuitive communication between electronic devices. Users of NFC-enabled devices can simply point or touch their devices to other NFC-enabled elements in the environment to communicate with them, making application and data usage easy and convenient. As a result, NFC technology opens up exciting new usage scenarios for mobile devices.



## Searching for Innovation around NFC

Using [PatSeer](#) as our database a sequence of steps was used to create our search query. Since, in PatSeer records are not grouped by families by default we searched individual records first and further collapsed them by one member per Family or by Patents and Applications. The publications included in the report are updated as of 30th October, 2012

The table below shows sequence of steps we followed. We started with a combination of keywords and finally combined it with relevant IPC Classes to restrict the result set to relevant records.

Search Steps	Search Queries	Results
1.	TAC:(NFC OR ("near field communication*"~3))	6989
Searched online sources (NFC Journals/portals/Wikipedia and other relevant sites) to come up with related terms		
2.	(TAC:((NFC OR ("near field communication*"~3)) AND ("NRZ cod*" OR (manchester AND ("cod* OR encod*"~2)) OR "modified miller") OR ("peer peer"~2) OR "card emulation") )	6791
After reviewing few results esp. from older publications, we came across some similar but irrelevant terms which we then excluded from full text using NOT operator.		
3.	(TAC:((NFC OR ("near field communication*"~3)) AND ("NRZ cod*" OR (manchester AND ("cod* OR encod*"~2)) OR "modified miller") OR ("peer peer"~2) OR "card emulation") ) <b>NOT</b> TACD:(("nanofibrillated cellulose" OR "nanofibrillar cellulose" OR "near frictionless carbon" OR "national flag card" OR "NLC" OR "NFC/2M" OR "number of flag*" OR "NFC 32*" OR "frequenc* nfc"~5 OR "need from child" OR "near field coupling" OR "nano frib*"~1 OR NTSC OR "network flow communication" OR "1/2NFC")	6040

Contd...

## Searching for Innovation around NFC – Contd.

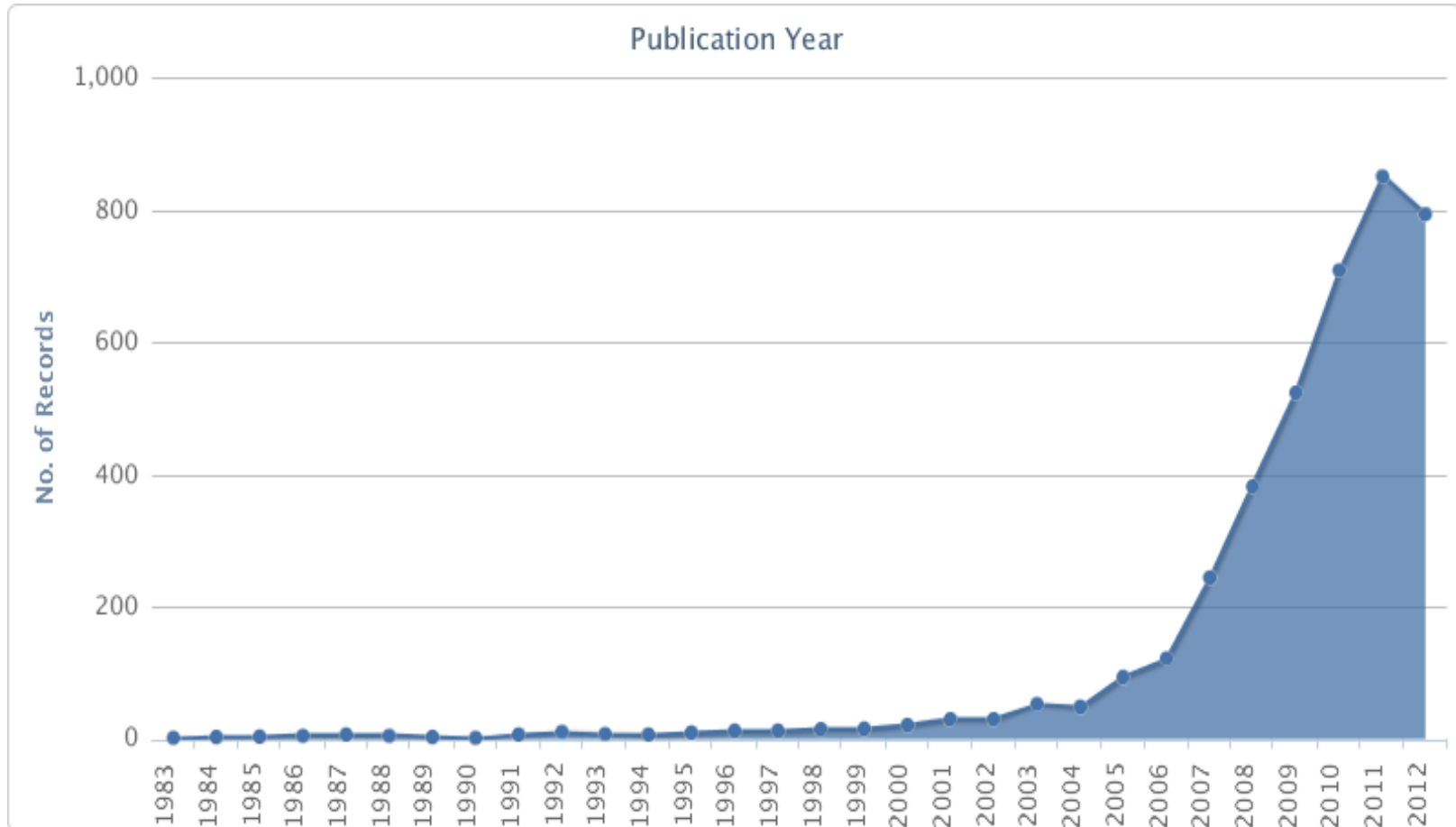
Increase relevance of results by restricting it to the main IPC classes for NFC and its applications.		
4.	<p>(TAC:((NFC OR ("near field communication*"~3)) AND ("NRZ cod*" OR (manchester AND ("cod* or encod*"~2)) OR "modified miller") OR (("peer peer"~2) OR "card emulation")) ) <b>NOT</b> TACD:("nanofibrillated cellulose" OR "nanofibrillar cellulose" OR "near frictionless carbon" OR "national flag card" OR "NLC" OR "NFC/2M" or "number of flag*" or "NFC 32*" OR "frequenc* nfc"~5 OR "need from child" OR "near field coupling" OR "nano frib*"~1 OR NTSC OR "network flow communication" OR "1/2NFC") <b>AND</b> IC:(H04* OR G06*)</p>	4911
Ran, deduplication by Patent-Application to remove duplicates from result list and get count of <b>Unique Records</b>		
5.	<p>(TAC:((NFC OR ("near field communication*"~3)) AND ("NRZ cod*" OR (manchester AND ("cod* or encod*"~2)) OR "modified miller") OR (("peer peer"~2) OR "card emulation")) ) <b>NOT</b> TACD:("nanofibrillated cellulose" OR "nanofibrillar cellulose" OR "near frictionless carbon" OR "national flag card" OR "NLC" OR "NFC/2M" or "number of flag*" or "NFC 32*" OR "frequenc* nfc"~5 OR "need from child" OR "near field coupling" OR "nano frib*"~1 OR NTSC OR "network flow communication" OR "1/2NFC") <b>AND</b> IC:(H04* OR G06*)</p>	4572 (Unique Records)
Collapsed Results by 1 member per Family to get count of <b>Unique Families</b>		
6.	<p>(TAC:((NFC OR ("near field communication*"~3)) AND ("NRZ cod*" OR (manchester AND ("cod* or encod*"~2)) OR "modified miller") OR (("peer peer"~2) OR "card emulation")) ) <b>NOT</b> TACD:("nanofibrillated cellulose" OR "nanofibrillar cellulose" OR "near frictionless carbon" OR "national flag card" OR "NLC" OR "NFC/2M" or "number of flag*" or "NFC 32*" OR "frequenc* nfc"~5 OR "need from child" OR "near field coupling" OR "nano frib*"~1 OR NTSC OR "network flow communication" OR "1/2NFC") <b>AND</b> IC:(H04* OR G06*)</p>	2733 (Unique Families)

## NFC Patents Trends

NOTE: Depending on the context, some of the patent analysis were done on Unique Publications (After deduplicating patents and applications from result set) and others were run on Unique Families (After collapsing by one member per Family). All of the following charts, heatmaps and tables were generated on PatSeer itself.

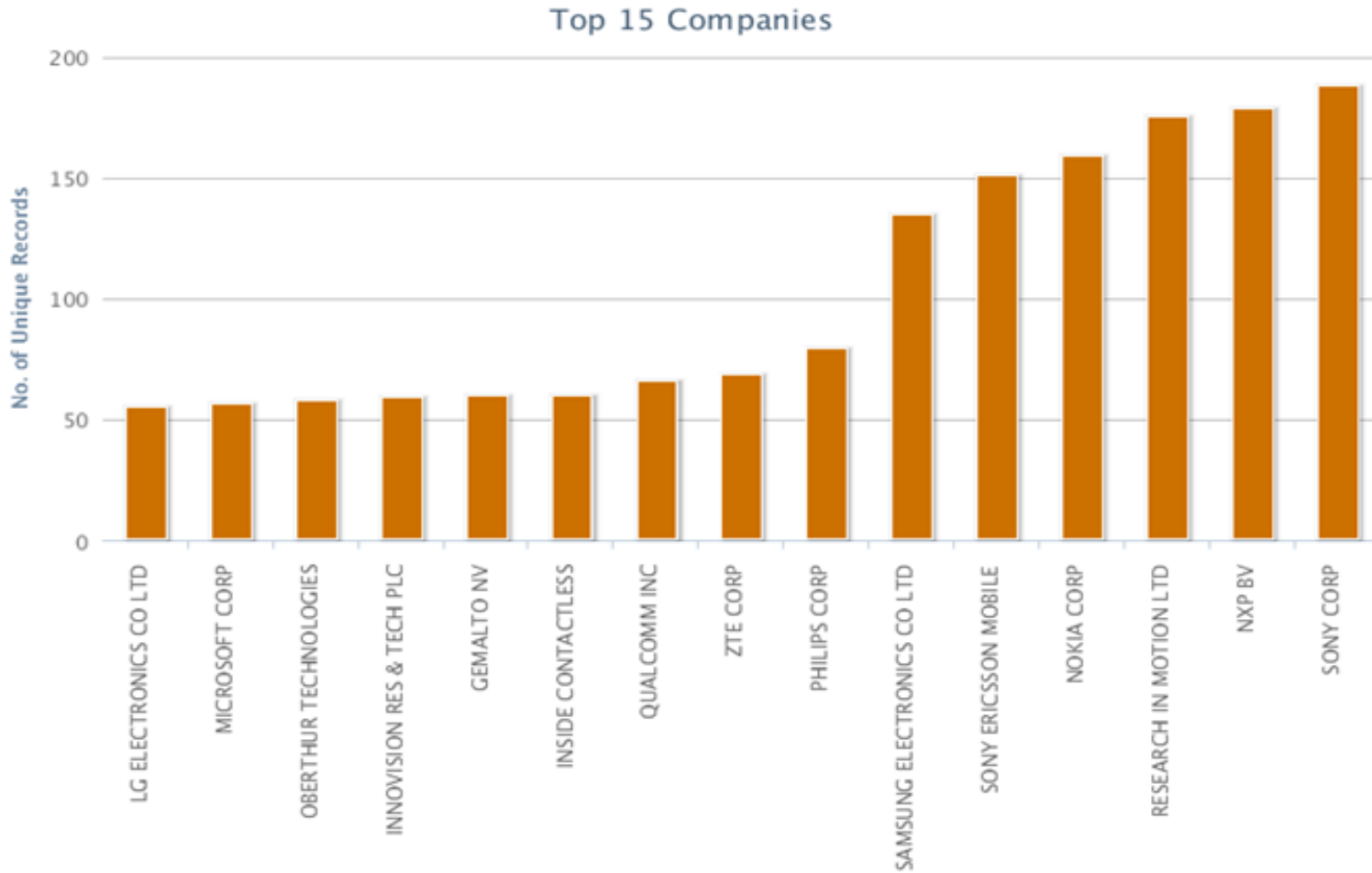
## Publication Trend

- Chart shows the publication trend for Near Field Communication in the last 30 years
- Number of publications have been increasing steadily YoY with maximum rate of increase in the last 5-6 years



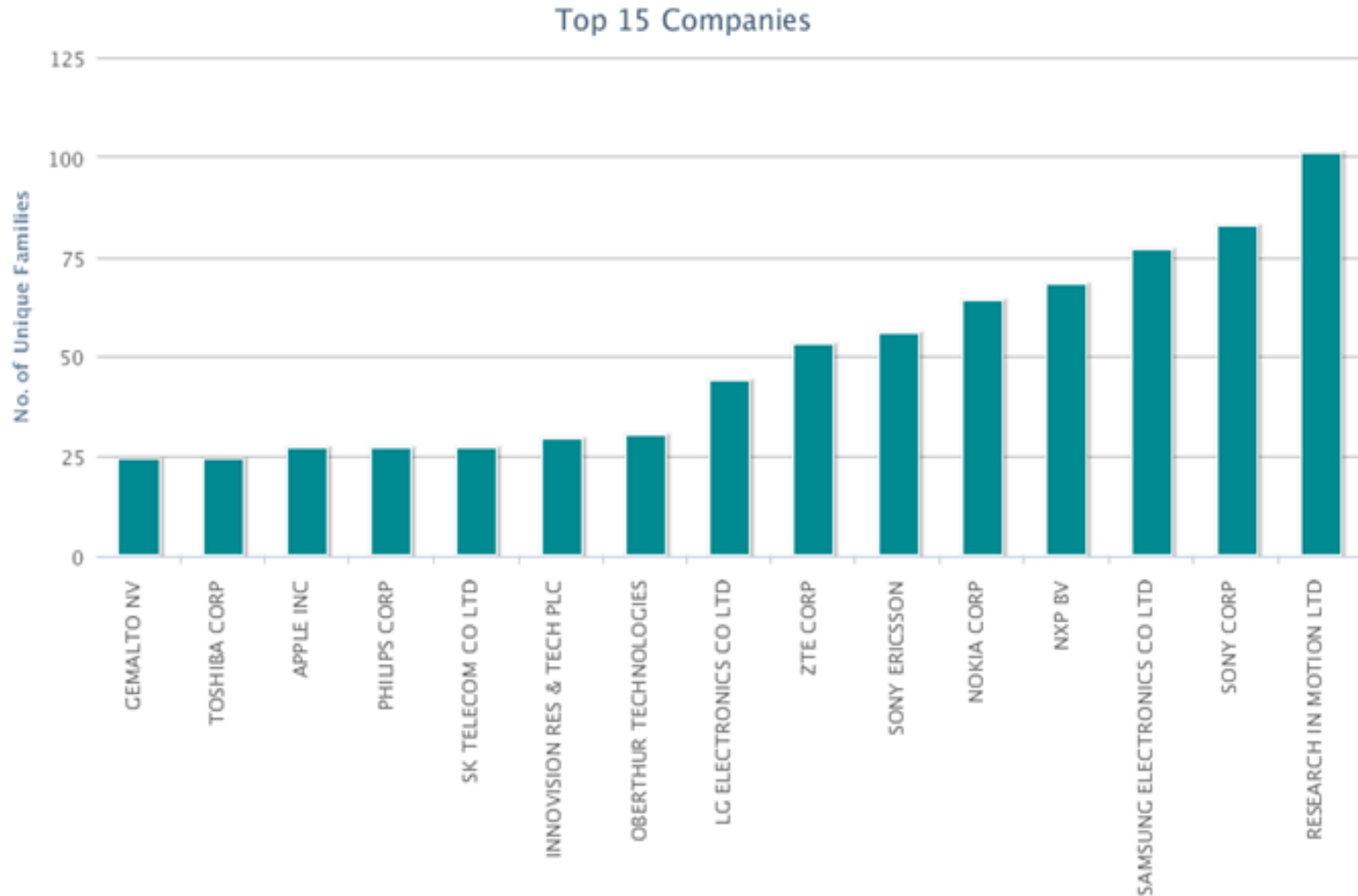
## Key Companies – By Unique Publications

- The chart shows top 15 companies by unique publications
- Sony has the maximum number of publications followed by NXP and RIM.



## Key Companies – By Unique Families

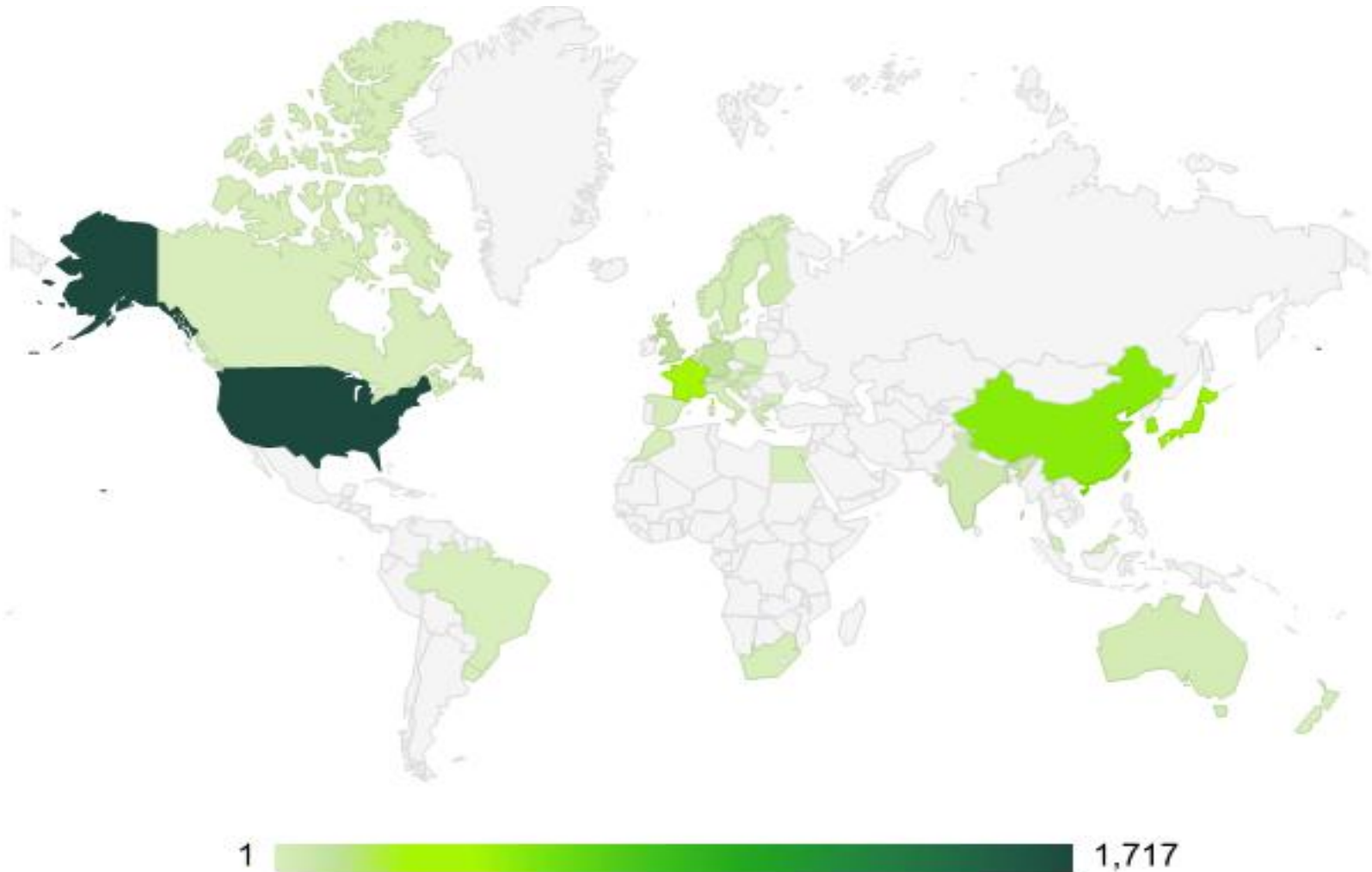
- The chart shows top 15 companies by number of Unique Families
- RIM is at the top followed by Sony although Sony had more number of Unique publications.
- Apple hasnt focused much on NFC and so its portfolio is ranked 13th in terms of number of unique families





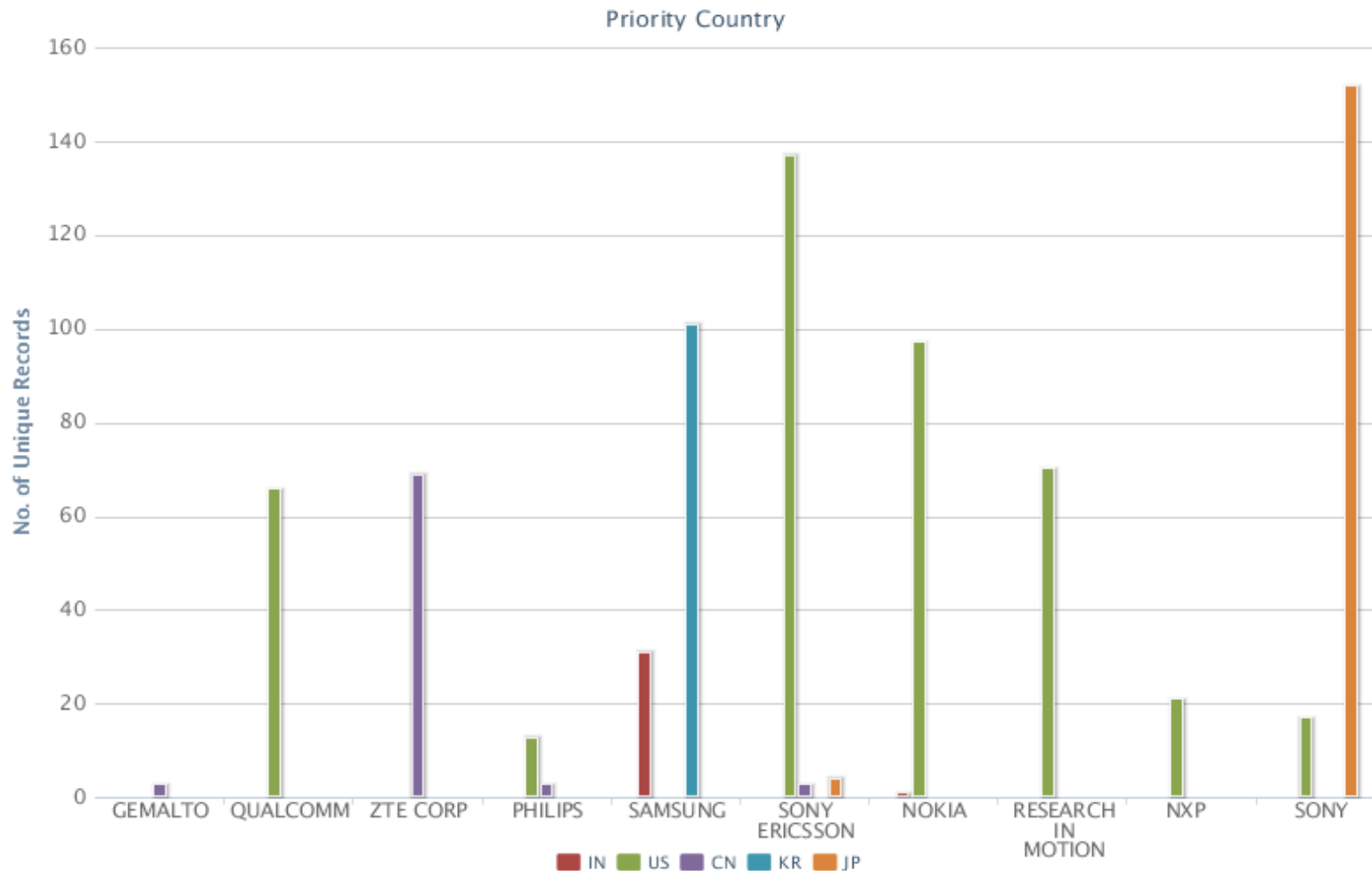
## Priority Country Map – Where is research being done ?

- The map shows the geographical distribution of research activity on NFC.
- Maximum filings are being done from US followed by China, Korea, France and Japan.



## Where are researching teams of key companies located ?

- The chart shows leading companies across major patenting authorities priority wise
- Samsung has NFC research being done in both Korea and India



## Publication Trend For Key Companies over Last 10 years sampled over 3 year intervals

- There's been a rapid increase in number of publications for Research in Motion Ltd in last 3 years while everyone else has seen a drop in publications.

◆ Assignee	◆ Total	◆ 2000-2003	◆ 2004-2006	◆ 2007-2009	◆ 2010-2012
NEC CORP	23	1	3	14	5
ERRICSON TELEFON AB L M	30	1	0	27	2
BROADCOM CORP	31	0	1	22	8
APPLE INC	34	0	0	29	5
MOTOROLA INC	48	1	5	36	5
LG ELECTRONICS CO LTD	57	0	27	16	14
QUALCOMM INC	68	0	0	43	25
ZTE CORP	69	0	0	40	29
PHILIPS CORP	80	0	56	22	2
SAMSUNG ELECTRONICS CO LTD	139	0	20	62	57
SONY ERICSSON MOBILE COMMUNICATION CO	151	0	43	93	15
NOKIA CORP	164	3	71	55	35
RESEARCH IN MOTION LTD	175	0	0	27	148
NXP BV	179	0	18	131	30
SONY CORP	201	22	65	65	49

# Company vs IPC

- Chart shows prominent companies across IPC Main Class. The values represent Unique Families
- Companies focused more on Application using NFC as an enabling technology include FirstData Corp, RIM, Apple, Korea Telecom (KT Corp), Microsoft and Nokia.

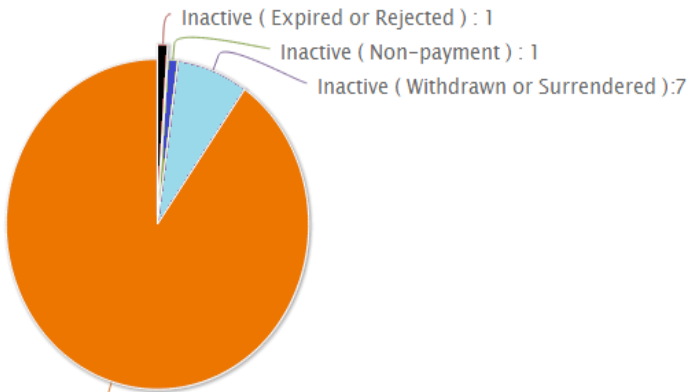
▲ Assignee	◆ Total	◆ H04B	◆ G06Q	◆ G06K	◆ G06F	◆ H04L	◆ H04W	◆ H04M	◆ H04Q	◆ G07F	◆ H04N
APPLE INC	27	0	13	2	12	5	0	0	0	0	1
BANK OF AMERICA	15	0	10	0	3	0	3	0	1	2	0
BROADCOM CORP	22	17	0	0	0	5	4	4	4	0	0
FIRST DATA CORP	13	0	11	3	2	0	0	4	1	2	0
FRANCE TELECOM SA	13	0	0	5	0	3	0	3	0	0	0
GEMALTO NV	24	6	5	8	2	9	8	5	0	3	1
GIESECKE & DEVRIENT GMBH	20	5	0	13	4	7	3	2	0	0	0
HUIZHOU TCL MOBILE COMM CO LTD	13	7	0	3	2	0	0	7	0	0	0
INNOVISION RES & TECH PLC	29	21	0	19	3	6	0	0	2	2	0
INSIDE CONTACTLESS	15	9	0	12	5	8	4	2	2	0	0
KHAN MOHAMMAD	14	8	10	0	2	0	5	0	0	0	0
KT CORP	14	0	7	3	0	0	3	0	0	0	0
LG ELECTRONICS CO LTD	44	27	0	0	10	4	6	9	6	0	6
LG INNOTEK CO LTD	13	6	0	3	4	5	4	0	0	0	0
MICROSOFT CORP	23	8	7	0	11	8	6	0	0	0	0
MOTOROLA INC	16	8	4	4	4	3	6	4	0	0	0
NEC CORP	16	7	5	0	4	5	5	5	0	0	0
NOKIA CORP	64	28	9	16	21	23	20	10	6	5	2
NXP BV	68	29	7	18	26	23	14	8	6	6	2
OBERTHUR TECHNOLOGIES	30	5	3	25	4	4	0	0	0	0	0
PHILIPS CORP	27	4	4	0	12	15	4	2	5	2	3
QUALCOMM INC	22	8	5	0	0	5	9	0	0	0	3
RESEARCH IN MOTION LTD	101	73	14	6	22	16	58	28	0	0	4
SAMSUNG ELECTRONICS CO LTD	77	32	3	5	25	22	17	8	3	0	6
SK TELECOM CO LTD	27	11	5	9	0	5	7	5	4	0	0
SONY CORP	83	55	0	36	21	37	17	12	9	2	10
SONY ERICSSON MOBILE COMMUNICATION CO	56	29	6	8	14	14	13	22	4	0	3
TOSHIBA CORP	24	16	0	4	4	0	5	8	0	0	0
YULONG COMPUTER TELECOM SCIENTIFIC CO LTD	15	9	0	0	0	4	0	7	0	0	0
ZTE CORP	53	27	10	13	0	11	19	10	2	12	0

## CLASS DESCRIPTIONS

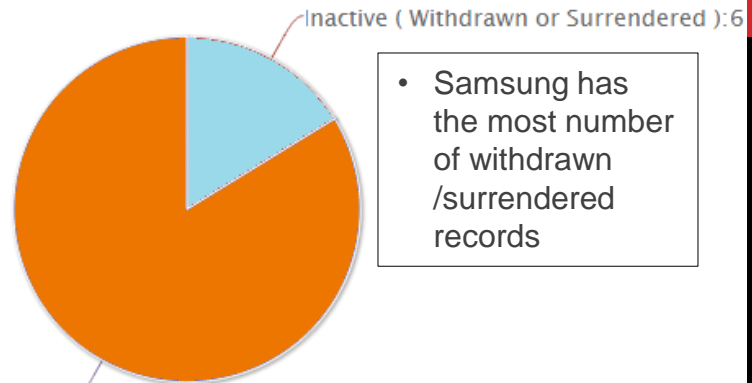
- H04B: TRANSMISSION
- G06Q: DATA PROCESSING SYSTEMS OR METHODS, SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES; SYSTEMS OR METHODS SPECIALLY ADAPTED FOR ADMINISTRATIVE, COMMERCIAL, FINANCIAL, MANAGERIAL, SUPERVISORY OR FORECASTING PURPOSES, NOT OTHERWISE PROVIDED FOR
- G06K: RECOGNITION OF DATA; PRESENTATION OF DATA; RECORD CARRIERS
- G06F: ELECTRIC DIGITAL DATA PROCESSING
- H04L: TRANSMISSION OF DIGITAL INFORMATION
- H04W: WIRELESS COMMUNICATION NETWORKS
- H04M: TELEPHONIC COMMUNICATION
- H04Q: SELECTING
- G07F: COIN-FREED OR LIKE APPARATUS
- H04N: PICTORIAL COMMUNICATION

# Portfolio Legal Status for Top 5 Companies

**SONY**

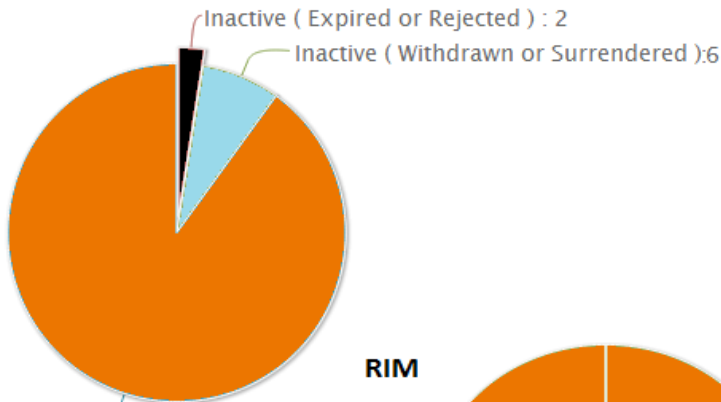


**SAMSUNG**

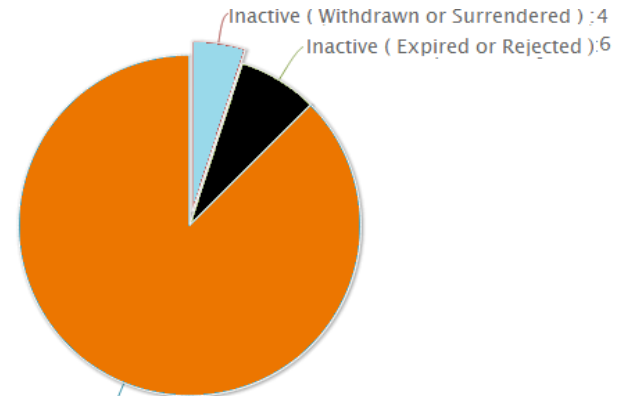


• Samsung has the most number of withdrawn /surrendered records

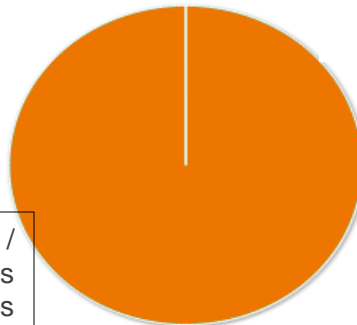
**NOKIA**



**NXP**

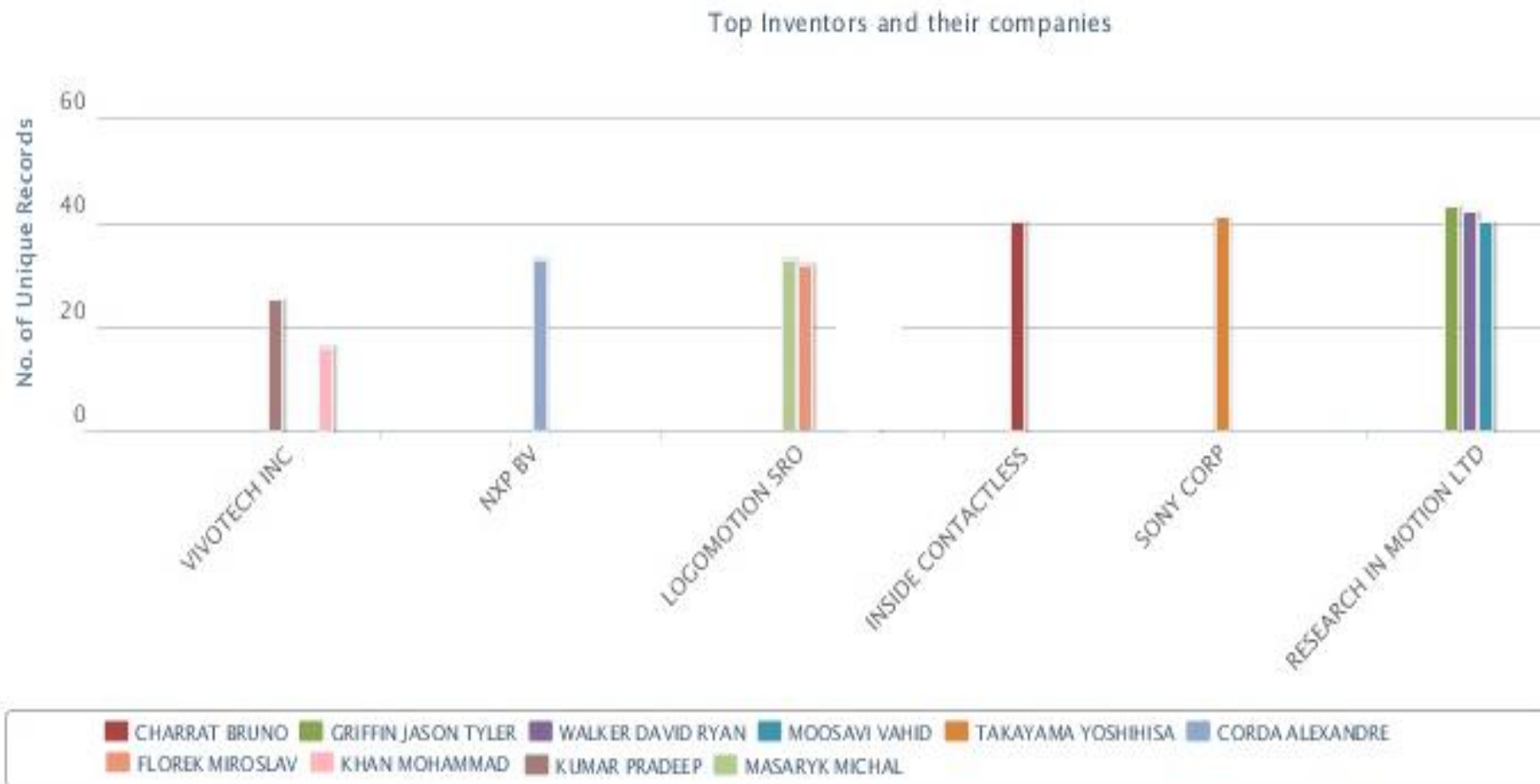


**RIM**



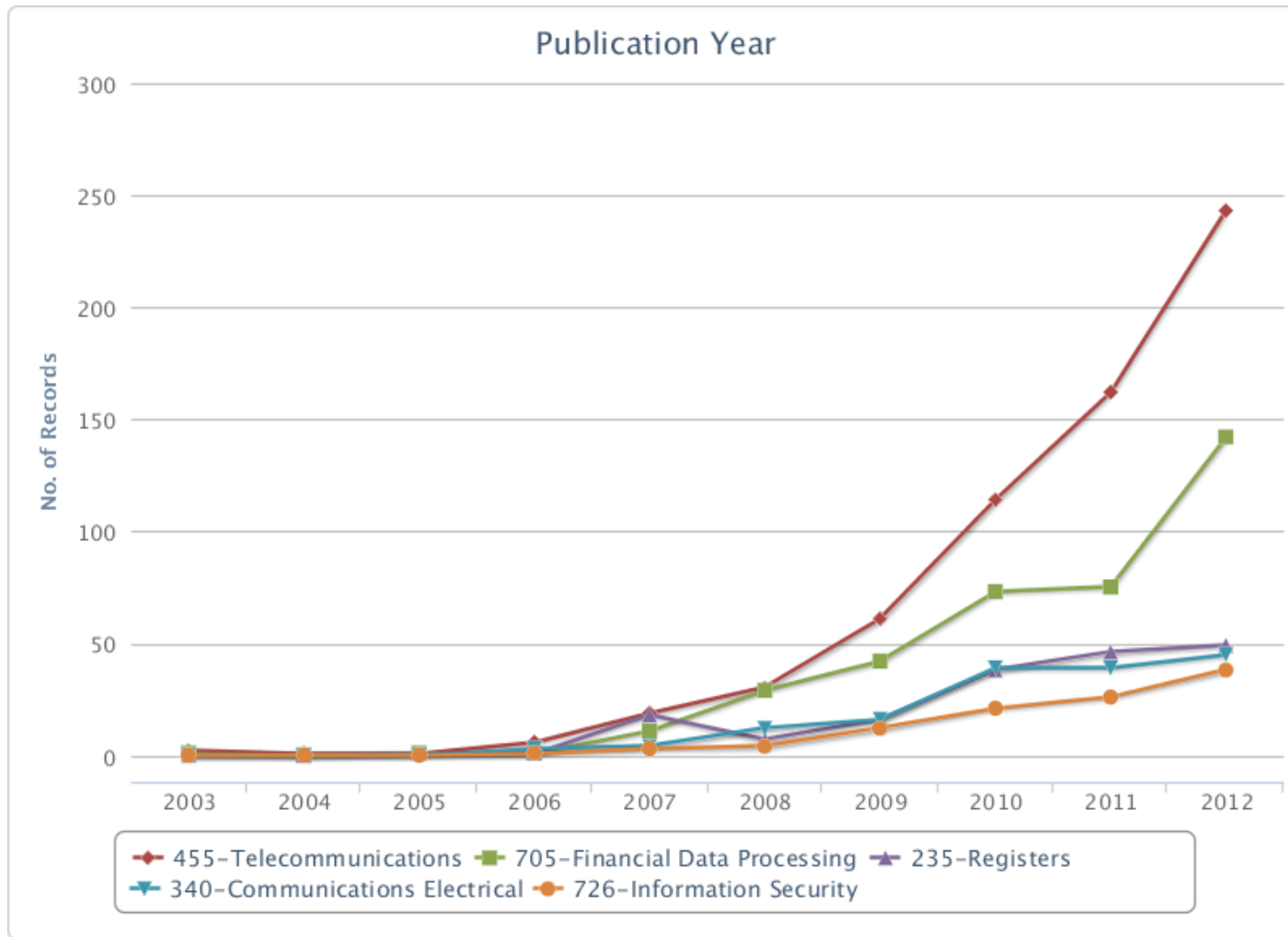
RIM has no expired/rejected or withdrawn / surrendered patents within its portfolio whereas NXP has most number of expired/rejected patents

# Top Inventors and the companies they work for



## Trends Across US Publications

- The below chart shows key US Class trends over unique US publications in last 10 years
- NFC Applications such as Payments and Ticketing fall under 705 class and are showing the maximum rate of growth.



# PatSeer Overview

## Coverage

- 30 million+ full text records of 11 countries and 60 million+ biblio records covering 95 + countries
- PDFs, Front Page Images, Mosaics, Simple/Extended Families, Bwd/Fwd Citations and more
- New publications updated the same week

## Search

- Search full-text in Original Language and English. (English title and abstract taken from equivalent family member where not available)
- Legal Status Search enhancements include date range, Event, Event Country (Incl. Designated Country Code events for EP,WO)
- No compromise on search techniques –Proximity, complex Boolean with proximity, command line searching, wildcards, truncation

## Search Aids

- Normalized Assignee Names for Top 3000 companies
- Looking up Matching Assignee /Inventor names
- Semantic Search Suggester
- Integrated Corporate Tree for 2500 companies
- Search History, Saved Searches and Alerts

## Search Result Handling

- Collapse results by family or de-duplicate Patent and Applications from results
- Multiple Views (Tabular/Standard/Standard+Family), Custom View, Detailed Record View
- Multiple Detailed view of a records can be opened in separate window tabs to allow for easy comparison

## Analysis

- Analyze search results via charts (column/line/pie/area/bubble/heatmap/geographical map)
- Unique Chart Layering technology allows for Multi and Cross Dimensional charting

## Exports

- Export upto 20K records at a time in Word/Excel/CSV format
- Charts can be also included in Word and Excel exports

## Projects

- Save and analyze upto 50K records in a project
- Custom Fields, Hierarchical Categories, Comments, Flags, Scoring
- Patent Dashlets™ - A different dashboard for each collaborating member



# Thank you !

In Next Part of this Report we save all the NFC results to a project in PatSeer, generate various categories over them and further analyze them for deeper insights.

[www.patseer.com](http://www.patseer.com)

For any questions and enquires please mail us at [sales@patseer.com](mailto:sales@patseer.com)