DRAFT

A PATENT LANDSCAPE REPORT

ON

DIGITAL WALLET

February, 2013

MAXVAL

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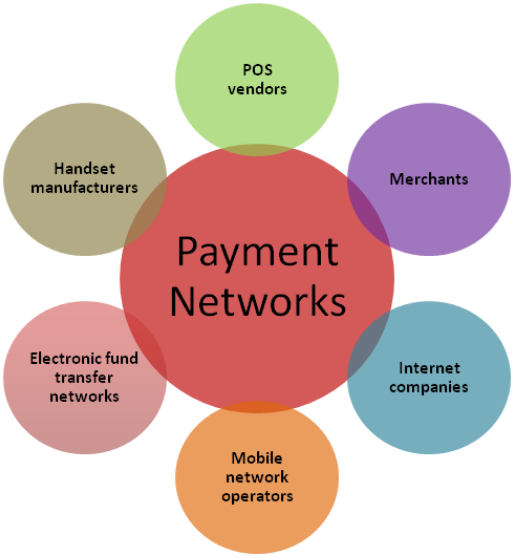
INTRODUCTION

Digital wallet (also referred to as electronic wallet, virtual wallet, wireless wallet, mobile wallet, smart wallet, etc.) is a technology that enables or facilitates quick and secure monetary transactions or other information exchange using a computer, a smartphone or a dedicated device.

With the advent of credit card technology, plastic cards with magnetic strips have been used for monetary transactions and information transmission. Although plastic cards such as credit cards and membership cards offer many advantages over their paper or metal coin counterparts, people however still need to carry multiple cards. With the growing popularity of smartphones, it is now possible to consolidate information storage, authentication, and payment/information transmission of almost all of a wallet's content in to a single device.

THE PAYMENT ECOSYSTEM

Digital wallet introduces new players into the field of monetary transactions including mobile manufacturers, mobile network operators, and mobile service providers. Aspects of digital wallet ecosystems include the underlying technology including near field communication (NFC), Short Message Service (SMS), barcode, Quick Response Code (QR code), etc., device including smartphone or dedicated device, and purchase channel including online payment, mobile commerce/payments at the retail point-of-sale (PoS).



THE DIGITAL WALLET SPACE IS HEATING UP

The digital wallet space has become very active since late 2010 with the entry of major players like Google, Visa, Paypal and Isis. Google launched the long awaited and much publicized Google Wallet in May 2011[1]. Google Wallet resides on the Android-powered devices and allows people to make purchases and receive deals and coupons simply by using their smartphones or tablets at the register. MasterCard, Sprint, and Citigroup joined forces with Google's NFC based Google Wallet platform.

Visa's V.me[2], announced in May 2011, will provide a secure online PoS to the customers. Visa launched the beta version of V.me with online retailer Buy.com. Bank of America, Wells Fargo, U.S. Bancorp and JPMorgan Chase are working with Visa.

Isis[3], a joint venture of AT&T Mobility, T-Mobile USA and Verizon Wireless, is backed by VeriFone, Ingenico, ViVOtech and Equinox. The joint venture announced agreements with financial institutions such as Visa, Barclays, MasterCard, Discover and American Express, and phone makers such as HTC, LG, Motorola Mobility, RIM, Samsung Mobile and Sony Ericsson.

Square[4], a new player in the mobile payment space, joined with Apple. The recent partnership between Square and Starbucks represents the continuing momentum of digital wallet implementation.

Other digital wallet platforms include PayPal Here by PayPal, Intuit's GoPayment, PayAnywhere, and Serve by American Express. Furthermore, Apple[5] has implemented its Passbook feature in iOS 6. Companies like Starbucks, Target and American Airlines are already supporting Passbook integration. Furthermore, the Merchant Customer Exchange[6] backed by Walmart and Target, announced its entrance into the field.

PROJECTED MARKET

Digital wallet is now seeing a rapid surge in activity in the U.S. and Europe, especially with the growing market penetration of smartphones and NFC. A report by IE Market Research[7] (IEMR) forecasts that the global mobile payment transactions will reach $945 billion in 2015, which is 30-fold increase from $31.5 billion for 2010; global NFC transactions will jump to 55.3 billion in 2015 with a compound annual growth rate of 105.2%. This indicates that mobile payments are poised to dominate the commercial transactions between 2012 and 2014. Juniper[8] predicts that NFC payments will hit $74 billion by 2015, and mobile payment transactions will exceed $1.3 trillion by 2017.

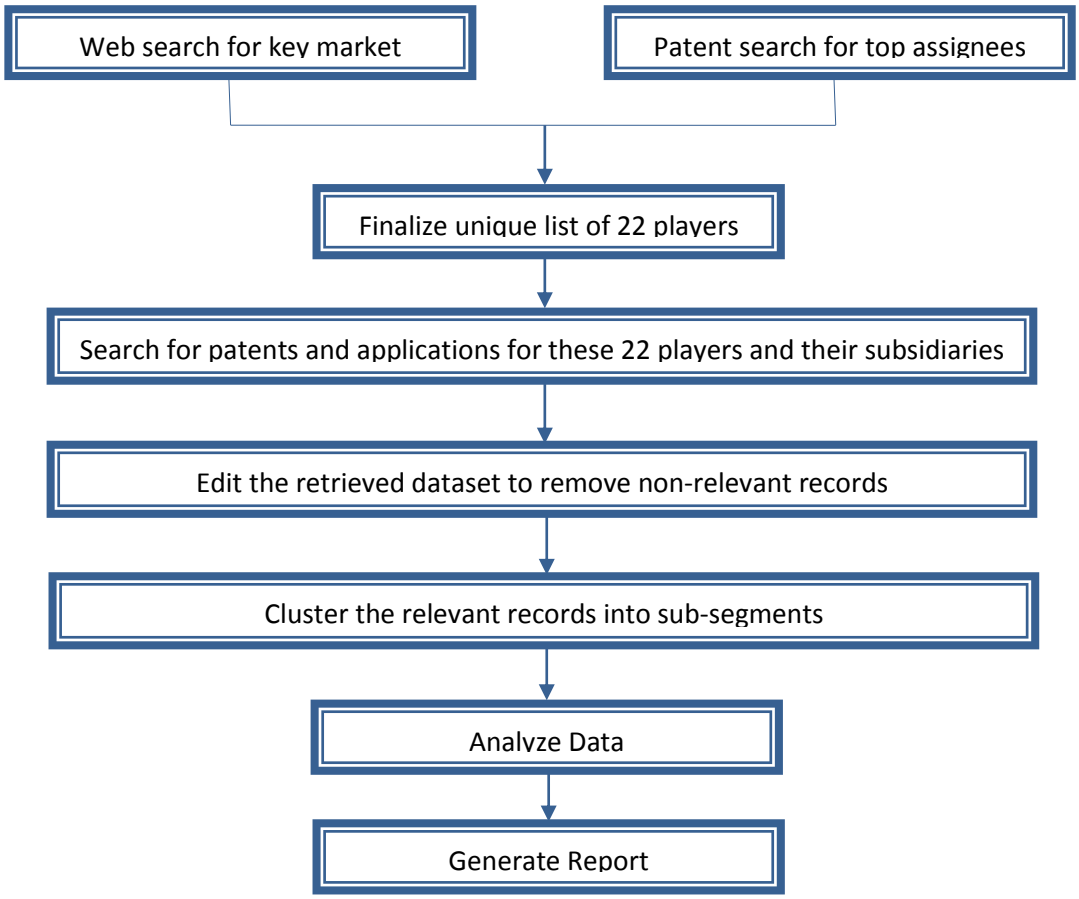
OBJECTIVE OF THIS LANDSCAPE REPORT

This report provides an overview of market and the worldwide patent trends in digital wallet technology with emphasis on wireless communication technology. Specifically, the study identifies the top players in the market and IP arena, and analyzes their patent portfolio and technology including:

- Filing trend in the past 20 years
- Patent success ratio
- Technology analysis
- Specific wireless communication technologies used in digital wallet
- Patent filings in the United States as compared to the rest of the world
- Most cited patents of prolific assignees

METHODOLOGY

The flowchart below depicts the process adopted for generating this report:



A comprehensive web search was conducted to identify key market players (refer to Table 4) in the digital wallet space. A patent search was conducted in Thomson Innovation using keywords and classification codes related to the digital wallet technology to identify the top assignees having IP assets (refer to Table 4). The key market players and the top assignees with IP assets were combined to arrive at a unique consolidated list of 22 players. A search for issued patents and published applications was conducted for these 22 players and their subsidiaries (refer to Table 5) using relevant keywords and IPC/USC codes yielded a dataset of 6,310 relevant records*. These records were further clustered into various technological sub-segments as shown in the following section.

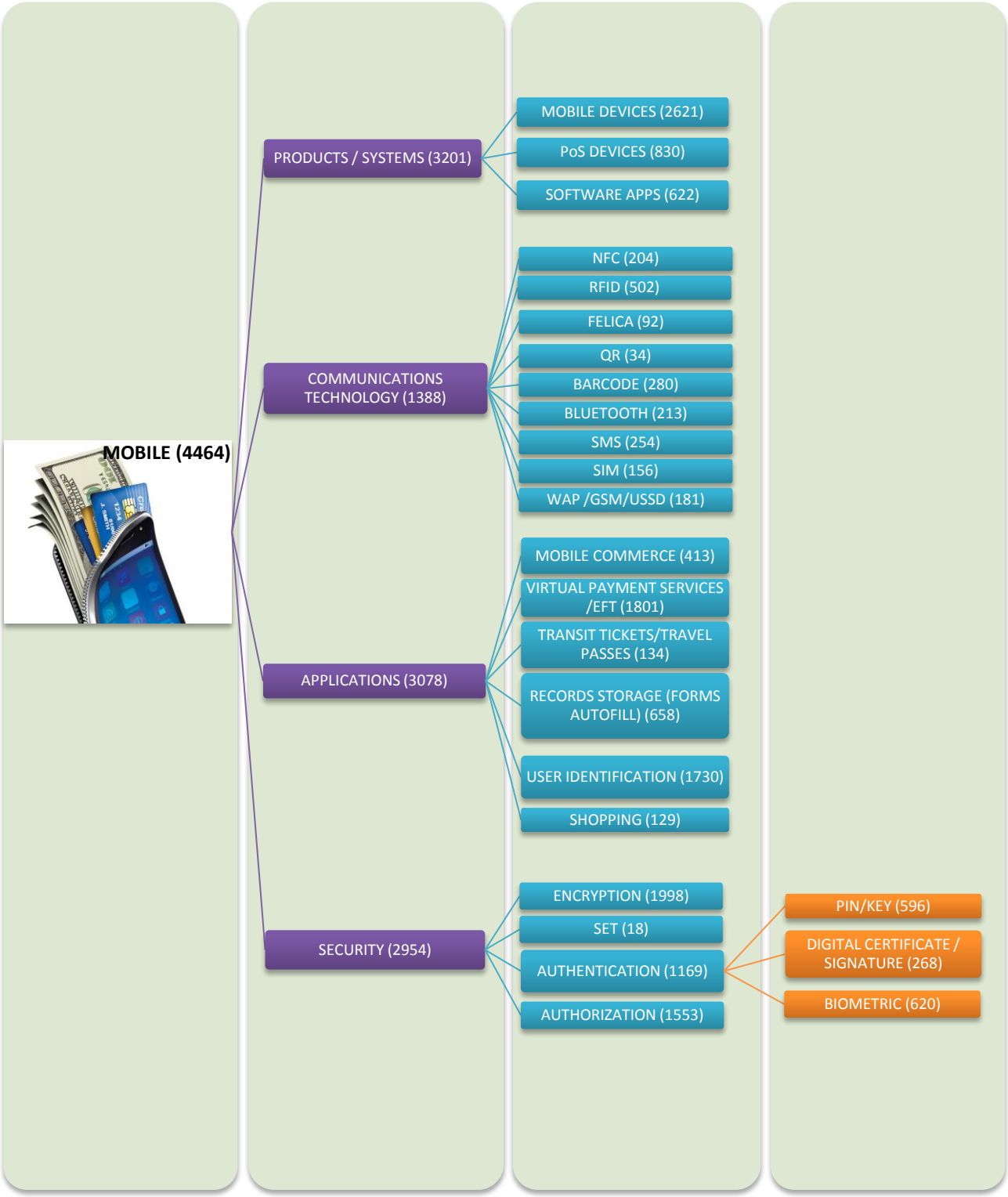
**Includes both issued patents and published applications.*

TECHNOLOGY CLUSTERING

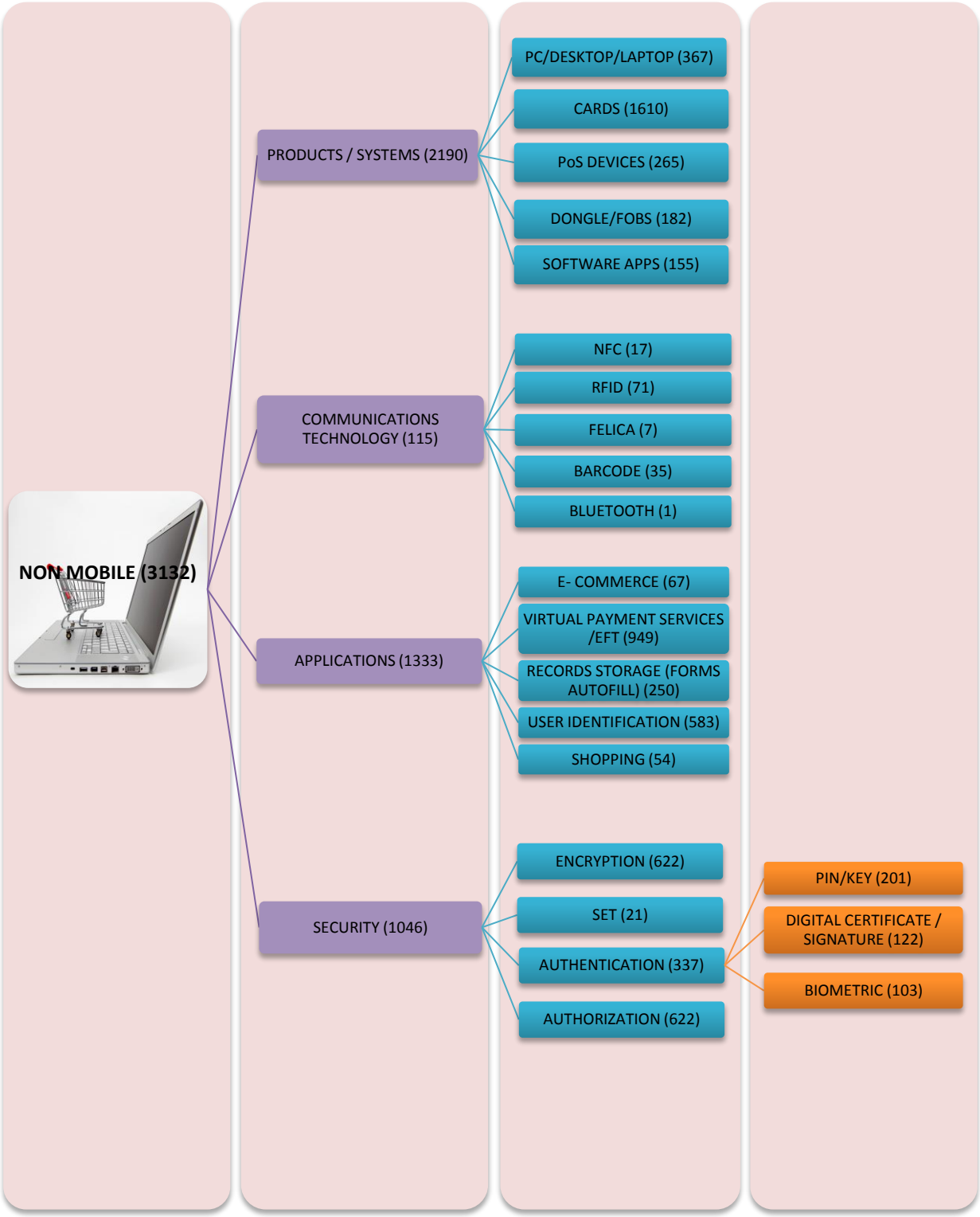
Digital wallets can be apps that operate in a mobile operating system, such as Andriod, iOS, and Windows Phone, of a mobile device. The mobile device may be a smartphone or other electronic device such as a notebook computer, tablet computer, personal digital assistant (PDA), video game device, GPS locator device, etc.

Digital wallet can primarily be classified into two categories: mobile-residing and non-mobile residing wallets. The mobile and non-mobile categories are further classified into the following sub-segments with slight but significant differences among the products, technology and applications. The graphic below shows the different sub-categories under the main segments and the number of records in each category.

MOBILE CATEGORY



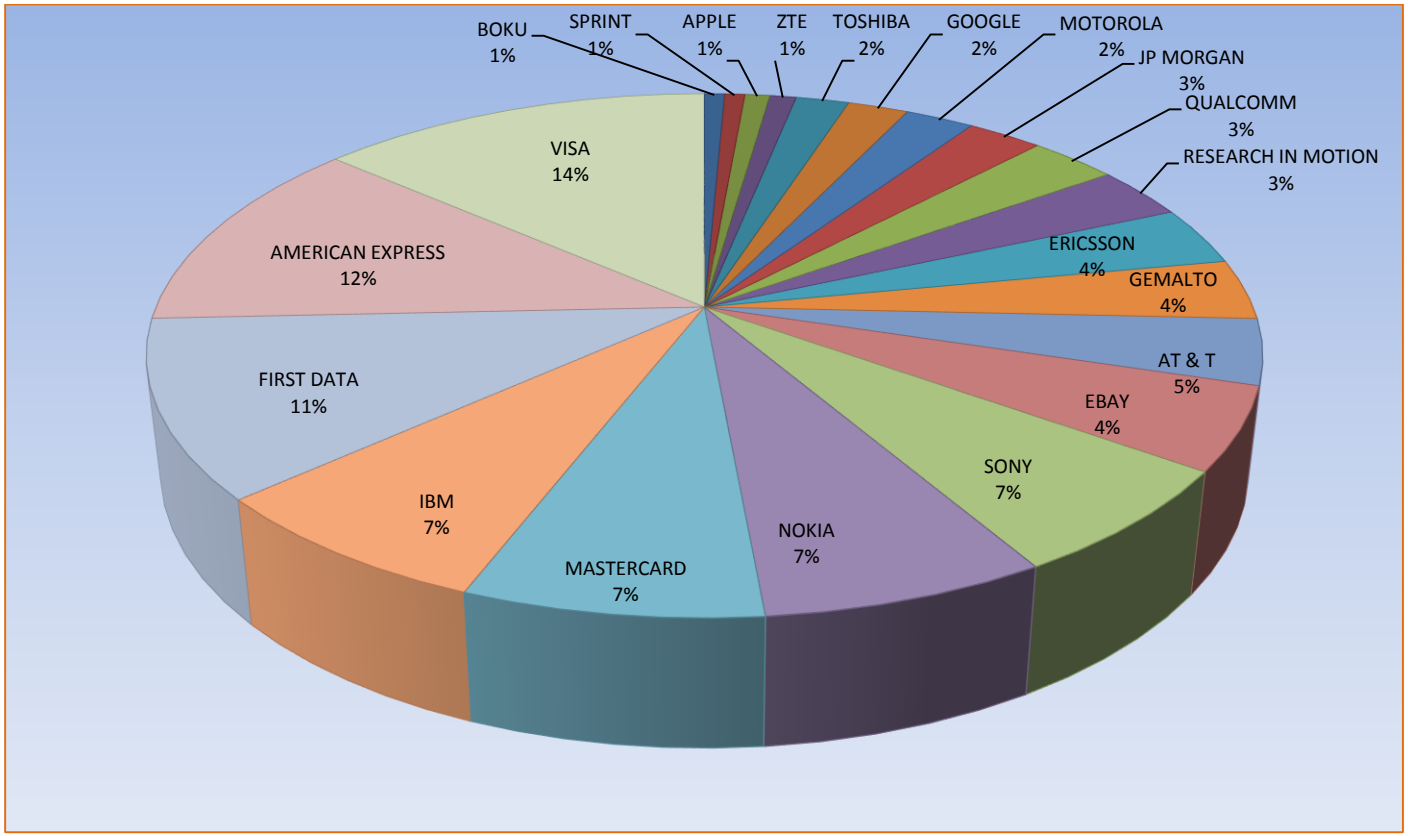
NON-MOBILE CATEGORY



DATA ANALYTICS

VOLUME ANALYSIS

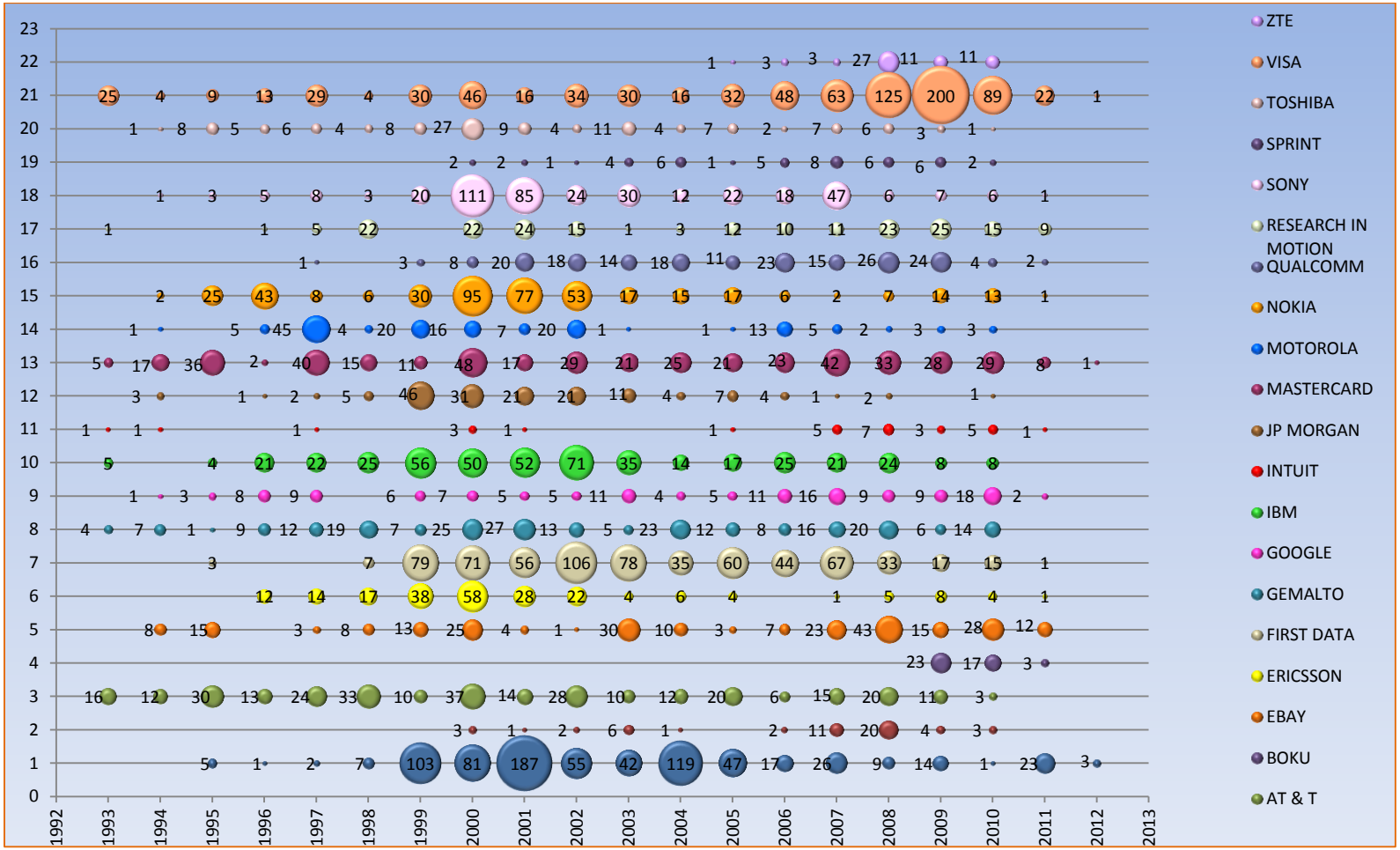
Figure 1: IP assets of players



The top three players, Visa, AmEx and First Data, make up around 37% of the overall assets, while the lower ranked players, Boku, ZTE, Sprint and Apple, hold about 1% each.

FILING TREND

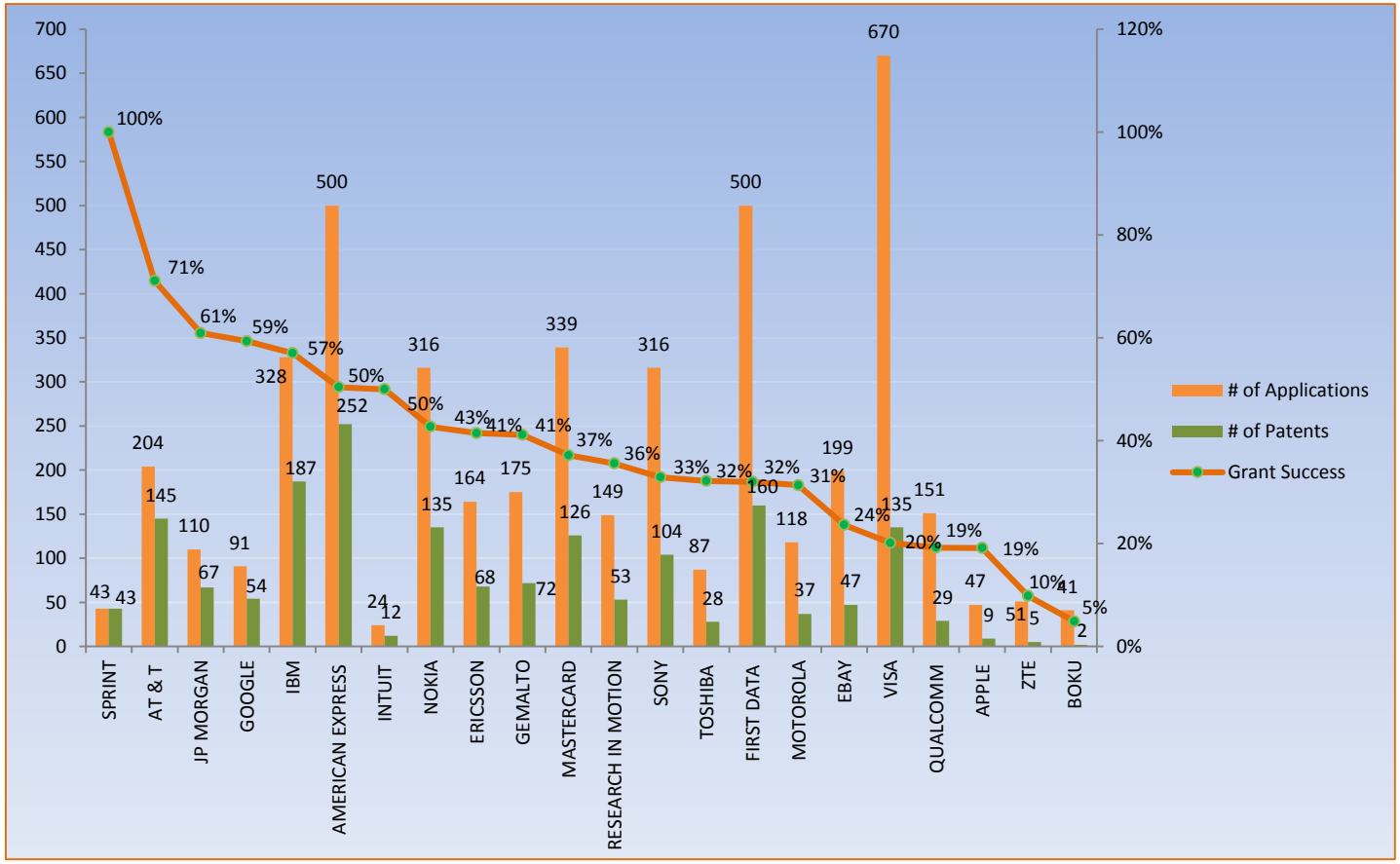
FIG. 2: Filing activity of the assignees for the past 20 years



The top ranked player Visa was very active between 2008 and 2010. The new player Boku entered into the digital wallet space in 2009 with 23 filings.

PATENT SUCCESS RATIO (PSR)

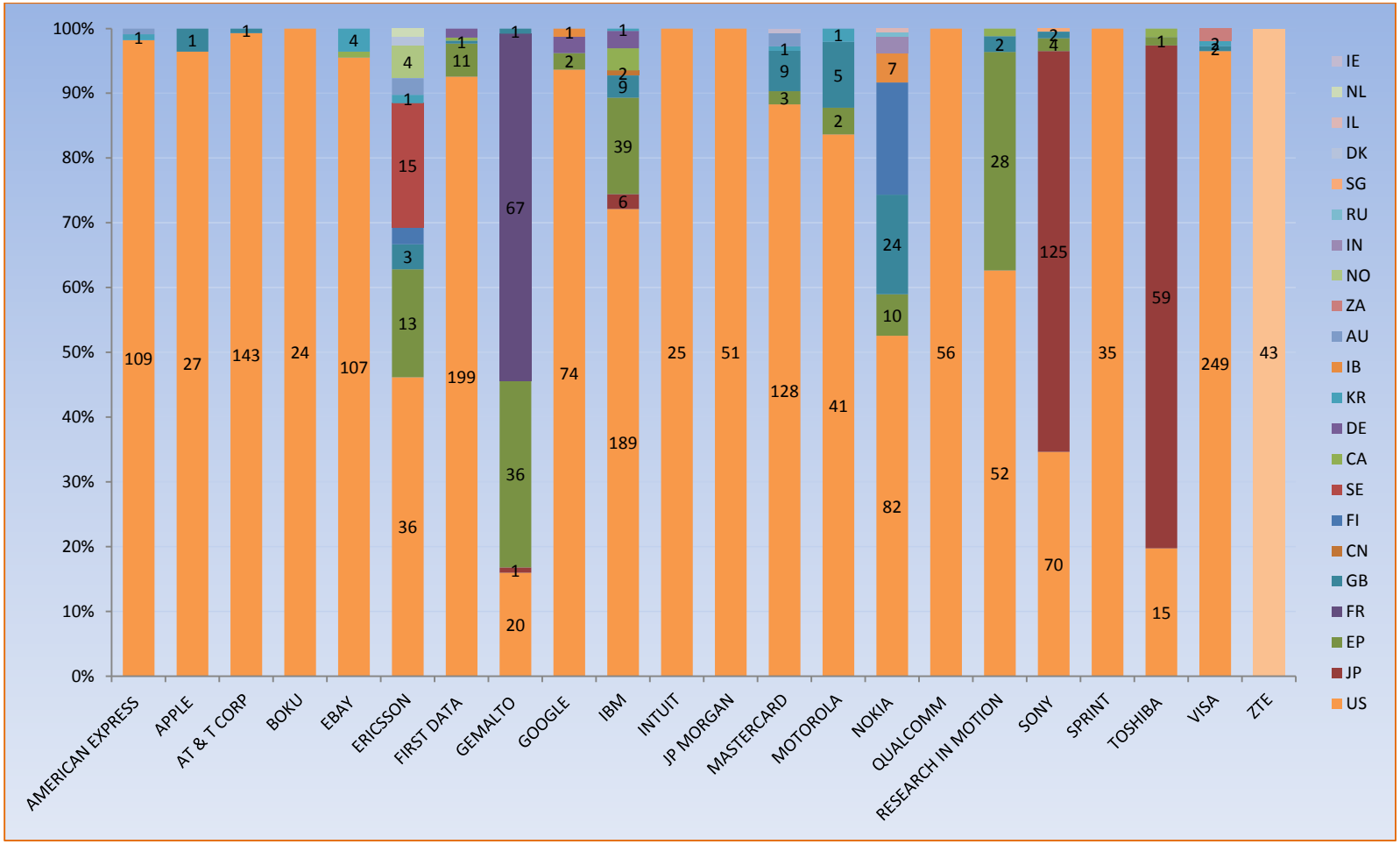
FIG. 3: Patent Success Ratio (PSR) of the assignees



Though Visa files more patent applications followed by AmEx and First Data, it is Sprint which tops in terms of PSR (ratio of patent grants to applications) with 100% conversion ratio followed by AT&T (71%).

PRIORITY COUNTRY ANALYSIS

FIG. 4: Distribution of Patent Families by Office of First Filing (OFF)



Boku, Intuit, JP Morgan, Qualcomm and Sprint have all their priority filings in the United States, whereas ZTE has all its first filings in China. Not surprisingly, Sony and Toshiba have most of their priority filings in Japan.

WIRELESS COMMUNICATION TECHNOLOGY

In general, digital wallet communication technology should be short range, low power consumption, and secure. Communication technologies that can be employed in digital wallets include:

NFC
- A set of standards for smartphones and similar devices to establish radio communication with each other by touching them together or bringing them into close proximity, usually no more than a few centimetres

RFID
- A wireless non-contact system that uses radio-frequency electromagnetic fields to transfer data from a tag attached to an object, for the purposes of automatic identification, tracking, contactless payments, etc..,

SMS
- A text messaging service component of phone, web, or mobile communication systems, using standardized communications protocols that allow the exchange of short text messages between fixed line or mobile phone devices SMS

Bluetooth
- A proprietary open wireless technology standard for exchanging data over short distances (using short-wavelength radio transmissions) from fixed and mobile devices, creating personal area networks with high levels of security

QR
- A matrix barcode (or two-dimensional code), readable by QR scanners, mobile phones with a camera, smartphones and used for encoding information in two-dimensional space

Barcode
- An optical machine-readable representation of data relating to the object to which it is attached

SIM
- An integrated circuit that securely stores the International Mobile Subscriber Identity (IMSI) and the related key used to identify and authenticate subscribers on mobile telephony devices

WAP/GSM/USSD
- Technical standards for accessing information over a mobile wireless network

FeliCa
- A contactless RFID smart card system primarily used in electronic money cards

Based on the patent analysis, RFID seems to play a prominent role in wireless communication technology for digital wallet, slowly replacing SMS and Bluetooth. New innovations, such as QR codes and NFC technologies are growing in popularity.

NFC is emerging as a dominant communication technology that has been getting a tremendous amount of attention with a growing user base. However, NFC's exclusion in the latest iPhone model by the Apple leads to speculation about the possible alternative technologies. The communication technologies focused by each of the assignees have been tabulated below in detail.

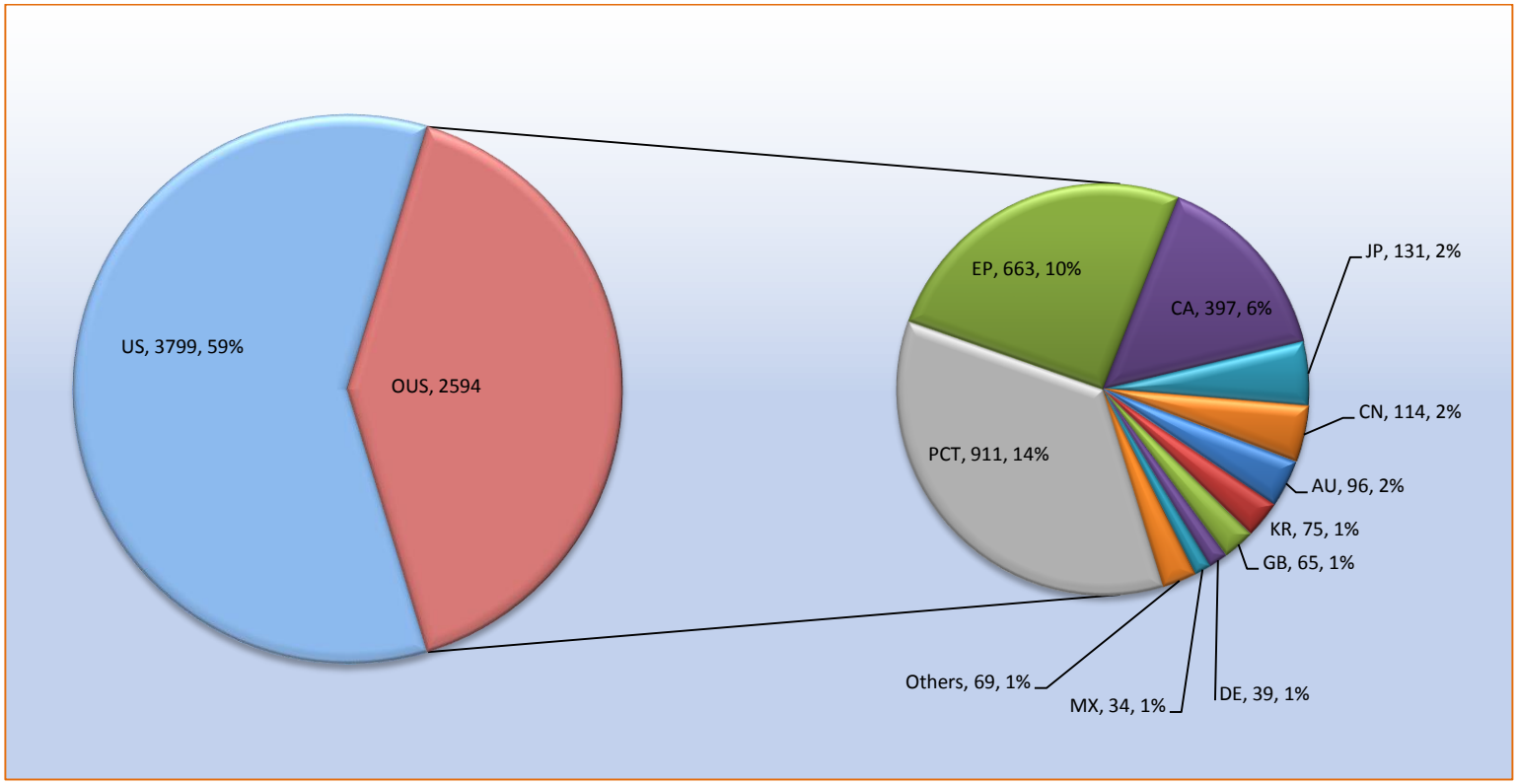
TABLE 1: ASSIGNEES vs. COMMUNICATION STANDARDS

ASSIGNEES	Barcode	Bluetooth	Felica	GSM-USSD-WAP	NFC	QR code	RFID	SIM	SMS
American Express	79	4	2	0	3	20	179	0	7
Apple	5	4	0	0	12	0	0	1	3
AT & T	17	9	0	10	3	0	19	3	12
Boku	0	0	0	0	0	0	0	0	17
Ebay	11	6	6	3	23	1	8	6	9
Ericsson	4	31	1	44	4	0	3	18	21
First Data	50	6	6	3	25	0	61	1	12
Gemalto	4	3	1	16	18	0	7	31	5
Google	4	6	9	0	12	0	22	2	1
IBM	19	17	0	9	3	2	34	4	19
Intuit	1	1	0	0	1	0	0	1	2
JP Morgan	18	4	0	8	0	0	22	8	14
Mastercard	4	0	1	3	4	2	24	0	9
Motorola	19	11	3	2	8	2	26	2	1
Nokia	11	66	9	60	13	0	86	39	60
Qualcomm	18	8	60	4	13	0	5	0	5
Research In Motion	3	9	0	3	9	0	7	5	4

ASSIGNEES	Barcode	Bluetooth	Felica	GSM-USSD-WAP	NFC	QR code	RFID	SIM	SMS
Sony	8	8	1	5	11	0	16	8	6
Sprint	1	1	0	4	6	0	12	1	0
Toshiba	7	9	0	0	0	1	5	0	3
Visa	32	10	0	6	36	6	30	16	44
ZTE	0	0	1	1	17	0	7	10	0

GEOGRAPHICAL DISTRIBUTION OF THE TECHNOLOGY

FIG. 5: Distribution of patent families across various geographies



This pie chart compares the patent filings within and outside the United States. PCT filings make up a significant portion of the non-US filings.

LEAD INVENTORS

Table 2 lists the prolific inventors with more than 5 patent families in their names for each of the assignees.

TABLE 2: PROLIFIC INVENTORS

ASSIGNEES	PROLIFIC INVENTORS (# OF RECORDS)
AMERICAN EXPRESS	Bishop, Fred A. (9)
	Peart, Lee J. (7)
	Beenau, Blayn W. (6)
APPLE	Rosenblatt, Michael (6)
AT & T	Zellner, Samuel, N. (10)
	Ruckart, John P. (6)
Boku	Hirson, Ron (10)
	Smith, Glyn Barry (7)
EBAY	Keithley, Thomas H. (7)
	Scipioni, German (6)
ERICSSON	Zavagli, Guido (6)
FIRST DATA	Algiene, Kenneth (13)
	Albrecht, Norbert (11)
	Mollett, Cassandra J. (11)
	Newbrough, Keith, A. (9)
	Skowronek, Daniel P. (9)
	Arthur, Steven E. (9)
	Mascavage, III, John Joseph (8)
	Seifert, Dean A. (8)

ASSIGNEES	PROLIFIC INVENTORS (# OF RECORDS)
	Dragt, Bruce A. (7)
	Kubo, Takayuki, Dr. (7)
	Phillips, Cheryl (7)
	Williams, Charles R. (6)
	Owen, Sarah (6)
	Swift, Amy L. (6)
	Ahles, Daniel (6)
	Royyuru, Vijay K. (6)
GEMALTO	Prevost, Sylvain (8)
	Girard, Pierre (7)
GOOGLE	Davis, Walter Lee (7)
IBM	Smith, Jr., Newton James (9)
	Paolini, Michael A. (8)
	Rodriguez, Herman (6)
	Winters, Scott Lee (6)
MASTERCARD	Wankmueller, John R. (10)
	Phillips, Simon (9)
	Kranzley, Arthur D. (6)
	Hogan, Edward J. (6)
NOKIA	Piikivi, Lauri (10)
	Cofta, Piotr, L. (8)
	Markkanen, Panu S. (6)
	Ekberg, Jan Erik (6)

ASSIGNEES	PROLIFIC INVENTORS (# OF RECORDS)
QUALCOMM	Minear Brian (6)
RESEARCH IN MOTION	Lazaridis, Mihal (9)
	Brown, Michael S. (7)
	Walker, David Ryan (7)
	Mallick Martyn Henri (6)
SONY	Ludtke, Harold Aaron (18)
	Maritzen, L. Michael (18)
	Sako, Yoichiro (10)
	Candelore, Brant L. (10)
	Hasumi, Yoshitsugo (9)
	Tsukamura, Yoshihiro (7)
	Takehara, Mitsuru (7)
	Abe, Miki (7)
	Ito, Koji (7)
	Fukushima, Takashi (6)
	Kubono, Fumio (6)
	Kon, Takayasu (6)
	Kamada, Yasunori (6)
SPRINT	Zhu, Kevin (17)
	Katzer, Robin D. (6)
	Bierbaum, Christopher J. (6)
VISA	Hammad, Ayman A. (37)
	FAITH, Partick, L. (25)

ASSIGNEES	PROLIFIC INVENTORS (# OF RECORDS)
	Carlson, Mark (24)
	Patterson, Barbara Elizabeth (15)
	Dominguez, Benedicto, H. (10)
	Winters, Michelle Eng (10)
	Fordyce, III, Edward, W. (10)
	Stan, Patrick (9)
	Manessis, Thomas J. (9)
	Siegel, Kevin Paul (7)
	Poufallah, Stacy (7)
	Byce, Charles Raymond (7)
	Aabye, Christian (7)
	Amaro, Leigh (6)
	Koganti, Krishna Prasad (6)
ZTE	Ning, Lu-you (10)
	Ma, Jingwang (9)
	Jia, Qian (7)
	Yu, Wan-Tao (6)

MOST CITED PATENTS

Most cited patents are listed below.

TABLE 3: MOST CITED PATENTS

Publication Number	# of Citing patents	Assignee	Title
US5757917A	665	EBAY INC	Computerized payment system for purchasing goods and services on the internet
US5790677A	559	VISA	System and method for secure electronic commerce transactions
US6016476A	471	IBM	Portable information and transaction processing system and method utilizing biometric authorization and digital certificate security
US5221838A	456	MOTOROLA	Electronic wallet
US5692132A	429	MASTERCARD	System and method for conducting cashless transactions on a computer network
US5649118A	382	AT & T CORP	Smart card with multiple charge accounts and product item tables designating the account to debit
US6609113B1	280	JP MORGAN	Method and system for processing internet payments using the electronic funds transfer network
US5887266A	173	NOKIA CORP	Method for using applications in a mobile station, a mobile station and a system for effecting payments
US6250557B1	134	ERICSSON	Methods and arrangements for a smart card wallet and uses thereof

APPENDIX

TABLE 4: KEY PLAYERS IDENTIFIED

MARKET PLAYERS (Products)	PLAYERS WITH IP ASSETS
GOOGLE (GOOGLE WALLET)	NOKIA
VISA (V.ME, PAYWAVE)	SONY
GOPAGO INC. AND JPMORGAN CHASE (GOPAGO LIVE)	FIRST DATA
MASTERCARD (PAYPASS)	ERICSSON
SPRINT (TOUCH WALLET)	IBM
AT&T MOBILITY, T-MOBILE USA AND VERIZON WIRELESS (ISIS)	GEMALTO
SQUARE (SQUARE WALLET)	TOSHIBA
INTUIT (INTU GOPAYMENT)	MOTOROLA
NORTH AMERICAN BANCARD (PAYANYWHERE)	QUALCOMM
APPLE (EASYPAY, PASSBOOK)	JP MORGAN
PAYPAL (PAYPAL WALLET)	ZTE CORPORATION
AMERICAN EXPRESS (SERVE)	BOKU INC
RESEARCH IN MOTION AND TURKCELL (TURKCELL CEP-T CÜZDAN)	
VERIFONE (SAIL)	

TABLE 5: CONSOLIDATED LIST OF ASSIGNEES AND THEIR MAJOR SUBSIDIARIES

PLAYERS	MAJOR SUBSIDIARIES
NOKIA CORPORATION	Apertio Ltd, Atrica Ireland Ltd, Novarra Inc, Technophone Ltd, Eizel Technologies Inc, Oz Communications Inc, Ne-Products Oy, F5 Net Works Inc, Nokia Corporation, Avvenu Inc, Loudeye Technologies Inc, Amber Networks Inc, Advanced Saw Products, Twango Inc, Atrica Israel Ltd, Nokia Moile Phones Ltd, Ramp Networks Inc, Nokia-Mobira Oy, Diamond Lane Communications Corp, Oy Nokia Ab, Telenokia Oy, Cellity Ag, Metacarta Inc, Nokia High Speed Access Products Inc, Nokia Data Systems Ab, Ntellisync Corp, Ipsilon Networks Inc, Navteq North America LLC, Navigation Solutions LLC, Traffic Com Inc, Symbian Ltd
SONY CORPORATION	Sony Music Holdings Inc, Crackle Inc, CBS Sony Records Inc, Sony Cinema Products, Sony Telecom, Sony Corporation, Aiwa, Sony Creative Software Inc, Sony Electronics Inc, Sony Pictures, Felica Networks, Columbia Pictures, 2waytraffic, Materials Research Corp, Digital Audio Disc Corp, SEL Holding, Sony Computer Entertainment Inc, Sony Mobile Communications
FIRST DATA CORPORATION	Encorus Technologies, Technology Solutions International Inc, Telecheck Services Inc, Intelligent Results Inc, Mas Inco Corp, Star Systems Inc, Datawire Communications Networks Inc, Deecal International Ltd, Size Technologies, FDR Interactive Technologies, International Check Services, Linkpoint International, Omnipay Ltd, Money Networks, GZS Gesellschaft Fur Zahlungbsysteme Mbh, Skyteller LLC, Pegaso , CTS Inc, Fundsxpress Inc, Anasazi Inc, Concord Computing Corp, Surepay Lp, Paycargo LLC, Integrated Payment Systems Inc, Paymentech Lp, Consumer Credit Associates Inc, Paysys International Inc, Datawire Communication Networks Inc, DW Holdings Inc, Telecash, Merchant Link LLC
ERICSSON	Telefonaktiebolaget L M Ericsson, EAB Ab, Optimi Corp, Entrisphere, Marconi S P A, Torrent Networking Technologies Corp, Mobeon Ab, Sielte S P A, Datasaab Ab, Microwave Power Devices Inc, Advanced Computer Communications, Redback Networks, Abatis Systems Corp, Tandberg Television Inc, Skystream Networks Inc
IBM	International Business Machines Corp, Tririga Inc, Metaphor Computer Systems, Ascential Software Corp, IBM, Rational Software Corp, Bigfix Inc, Transitive Ltd, Arsenal Digital Solutions Worldwide Inc, Diligent Technologies, Ilog, Lotus Development Corp, Language Analysis Systems Inc, Net Integration Technologies Inc, Solid Information Technology, Advantis, Crossworlds Software Inc, Ounce Labs Inc, Blade Network Technologies Inc, Aptsoft Corp, Clarity Systems S L, Consul Risk Management, Ubique Ltd, Ascential Software Inc, Softek Storage Solutions Corp, Algorithmics Software LLC, Corio Inc, Coremetrics Inc, Intelliden, Filenet Corp, Datapower Inc, Micromuse Inc, Sterling Commerce Inc, Filesx Ltd, Arsenal Digital Solutions Inc, Cast Iron Systems Inc, Exeros Inc, Lombardi Software Inc, Platform Solutions Inc, Productive

PLAYERS	MAJOR SUBSIDIARIES
	Solutions Inc, Internet Security Systems Inc, MRO Software Inc, Meiosys, Cyanea Systems Corp, Early Cloud & Co, Encentuate Pte Ltd, Iphrase Technologies Inc, SPSS Inc, Commquest Technologies Inc, Watchfire Corp, Guardium Inc, Xiv Ltd, Openpages Inc, Datamirror Corp, Alphablox Corp, Cognos, Adaytum Inc, Netezza Corp, Tizor Systems Inc, Nutech Solutions Inc
GEMALTO	Gemalto, Trusted Logic, TDS Todos Datasystem Ab, Smart Cards Technology, CP8 Technologies, Axalto, Soliac, Schlumberger Malco Inc, Malco Products Inc, Gemplus, Setec Oy, Celo Communications, Multos
TOSHIBA CORPORATION	Vital Images Inc, Kabushiki Kaisha Toshiba, Landis & Gyr Technology Innovation Ag, Tokyo Shibaura Denki Kk, Nishishiba Electric Co Ltd, Ansaldo Trasmissione E Distribuzione S R L, Mobile Broadcasting Corp, Kabusihiki Kaisha Toshiba, Fauske & Associates Inc, TFPD Corp, A & T Battery Corp, TEC Corp, Combustion Engineering, Westinghouse Energy Systems, Westinghouse Electric, Nuclear Fuel Industries Ltd
MOTOROLA	Clinical Micro Sensors Inc, Motorola, Nextnet Wireless Inc, Topsil A/S, Vertex Standard Co Ltd, Digianswer A/S, Meshnetworks, Ucentric Holdings Inc, Freegate Corp, Universal Data Systems, Xtreme Spectrum Inc, Uiq Technology Ab, Active Telco Inc, Appeal Telecom Co Ltd, Mi Inc, Airdefense Inc, Force Computers, Meshnetworks Inc, Starfish Software Inc, Wireless Valley Communications Inc, Riverdelta Networks, Melco Mobile Communications, Nippon Motorola Ltd, Metrowerks Corp, Tut Systems Inc, Indala Corp, Videotelecom Corp, Winphoria Netwroks Inc, Msi Data Corp, Telxon Corp, Symbol Technologies, Metanetics Corp, Pos Com Inc, Trio Security Inc, Matrics Inc, TTP Communications Ltd, IP Access Ltd
QUALCOMM	Qualcomm Inc, Berkana Wireless Inc, Iridigm Display Corp, Bitboys Oy, Firethorn Holdings LLC, Summit Microelectronics Inc, Elata Plc, Trigenix Ltd, Spike Technologies Inc, Xiam Technologies Ltd, Iskoot Inc, Nphase LLC, Snaptrack Inc, Wireless Knowledge, Atheros Inc, Zydas Technology Corp, Intellon Corp, Digital Fountain, Flarion Technologies Inc, Pixtronix Inc
JP MORGAN	JP Morgan, The Chase Manhattan Bank, Washington Mutual Inc, Providian Bancorp Services, The Bear Stearns Companies Inc, Tumble Forms Inc, First Chicago Corp
APPLE	Apple Inc, Next Inc, Apple Comptuer Inc, Spruce Technologies Inc, P A Semi Inc, Zayante Inc
GOOGLE	On2 Technologies Inc, Green Border Technologies, Tonic Systems Pty Ltd, Global IP Solutions Ab, Admobile Inc, Applied Semantics Inc, Brunet Holding Ag, Imageamerica Inc, Doubleclick Inc, Marratech AB, Klipmart Corp, Picasa Inc, Nevenengineering Inc, @Last Software Inc, Metaweb Technologies Inc, Youtube LLC, Dmarc Networks Inc, Postini Corp, Ebooks Technologies Inc, Falk Esolutions Gmbh, Google Inc, Jotspot Inc, Urchin Software Corp, Adscape Media Inc, Ita Software Inc, Terayon Communications Inc, Motorola Mobility Inc, Quantum Bridge Communications Inc, 4homemedia Inc, Kreatel Communications AB,

PLAYERS	MAJOR SUBSIDIARIES
	Broadbus Technologies Inc, General Instrument Of Canada Ltd, Next Level Communications LLP, Widevine Technologies Inc
EBAY	Gmarket Inc, Rent Com Inc, Internet Auction Co Ltd, Shopping Com Ltd, Stubhub Inc, Half Com Inc, Ebay Inc, Paypal Inc, E-Dialog Inc, Bill Me Later Inc, Carad Inc
AT & T	AT & T Intellectual Property II LP, AT & T Mobility II LLC, American Telephone & Telegaraph Co, USinternet Working Inc, Interwise Co Ltd, AT & T Corp, Teleport Communications Group Inc, Wayport Inc, Ingenio Inc, Xanboo Inc, Bellsouth Intellectuall Property Corp, Graphic Scanning Corp, Cingular Wireless, Ameritech Inc, SBC Knowledge Ventures, Bell Telephone Co, Comcast Cellular Communications Inc, American Applied Technology, Metromedia Inc, Yantra Corp, Prodigy Communications LP, Comergent Technologies Inc
VISA	Playspan Inc, Visa Inc, Authorize Net LLC, Fundamo Ltd, Cybersource Corp
MASTERCARD	Europay International, Orbiscom Ltd, Mondex, Cirrus Systems LLC, Interbank Card Association, Europay, Mastercard
AMERICAN EXPRESS	Haley Corp, Fiware Inc, Serve Virtual Enterprises Inc, Harbor Payments Corp, Revolution Money Inc, American Express, Rosenbluth Inc
INTUIT	Mint Software Inc, Intuit, Medfusion Inc, Electronic Clearinghouse Inc, Employeematters Inc
SPRINT	Nextel, US Telecom International Inc, Sprint, American PCS Communications LLC, Virgin Mobile USA, Helio LLC, Transworld Telecommunications Inc
RESEARCH IN MOTION	Research In Motion , 2012244 Ontario Inc, Qnx Software Systems, Arizan Corp, Chalk Media Service Corp, Torch Mobile Inc, Teamon Systems Inc, TAT The Astonishing Tribe AB, Ascendent Systems Inc, Slipstream Data Inc, Cellmania Com Inc, Certicom, M-Stack Ltd, Paratek Microwave Inc
ZTE CORPORATION	-
BOKU INC	-

TABLE 6: SEARCH STRINGS

#	SEARCH STRINGS	HITS	FILTER DEFINITION
1	ALL=((smart OR digital* OR electronic OR purchas* OR "NFC" OR "near field communication" OR RFID OR "radio frequency" OR Bluetooth OR "QR" OR "quick response" OR barcode OR "bar code" OR FeliCa OR non-contact OR "SIM" OR "subscriber identity module" OR "SMS" OR (short ADJ messag* ADJ service*1) OR "WAP" OR "GSM" OR contactless OR "contact less" OR wireless OR "short range") NEAR5 (pay* OR transaction*1 OR transfer* OR commerc* OR financ* OR shop*)) AND (IC=(G06Q* AND (H04M* OR H04W*)) OR UC=(455* AND (705* OR 235*)));	5328	Digital wallet keywords with IPC/USC combinations for mobile applications

#	SEARCH STRINGS	HITS	FILTER DEFINITION
2	IC=(G06Q002032 OR G06Q002036) OR UC=(705/41);	1041	Core digital wallet IPC/USC
3	ALL=((smart OR digital* OR electronic OR purchas* OR "NFC" OR "near field communication" OR RFID OR "radio frequency" OR Bluetooth OR "QR" OR "quick response" OR barcode OR "bar code" OR FeliCa OR non-contact OR "SIM" OR "subscriber identity module" OR "SMS" OR (short ADJ messag* ADJ service*1) OR "WAP" OR "GSM" OR contactless OR "contact less" OR wireless OR "short range") NEAR20 (pay* OR transaction*1 OR transfer* OR commerc* OR financ* OR shop* OR charg*)) AND (IC=(G06Q002032 OR G06Q002036) OR UC=(705/41));	462	Digital wallet keywords with core IPC/USC for mobile applications
4	SS1 OR SS2 OR SS3	6248	
5	ALL=((smart OR mobile OR phone OR wireless OR cell* OR "m") ADJ3 (wallet* OR purse OR vault*)) AND (IC=(G06Q* OR G07F* OR G06K* OR H04M* OR H04W* OR H04B* OR G06F* OR H04L*) OR UC=(705* OR 235* OR 455* OR 726* OR 709* OR 707* OR 71550*));	1796	Mobile wallet keywords with IPC/USC combinations
6	SS4 OR SS5	7916	Mobile wallet
7	CTB=(((digital* OR virtual* OR electronic OR PoS OR "point of sale" OR dongle* OR fob*1 OR desktop OR computer OR "smart card" OR online OR "on line" OR purchas* OR web OR "NFC" OR "near field communication" OR RFID OR "radio frequency" OR Bluetooth OR "QR" OR "quick response" OR barcode OR "bar code" OR non-contact OR contactless OR "contact less" OR "short range") NEAR5 (pay* OR transaction*1 OR transfer* OR commerc* OR financ* OR shop*))) AND (IC=(G06Q0020* OR G06Q003004 OR G06Q003006) OR UC=(235/380));	21260	Digital wallet keywords with core IPC/USC combinations for non-mobile applications
8	ALL=((digital* OR electronic OR "e" OR virtual OR cyber OR vehic* OR pseudo) ADJ3 (wallet* OR purse OR vault*)) AND (IC=(G06Q* OR G07F* OR G06K* OR H04B* OR G06F* OR H04L*) OR UC=(705* OR 235* OR 726* OR 709* OR 707* OR 71550*));	8107	Digital wallet keywords with IPC/USC combinations for non-mobile applications
9	SS7 OR SS8	27294	Non-mobile digital wallet
10	SS6 AND SS9	32550	Digital wallet
11	SS10 AND ("apple" OR "nokia" OR "google" OR "sony" OR "ebay" OR "e bay" OR "a t & t" OR "at&t" OR "at & t" OR "first data" OR "visa" OR "mastercard" OR "master card" OR "american express" OR "amex" OR "qualcomm" OR "toshiba" OR "motorola" OR "zte" OR "ericsson" OR "ibm" OR "international business machines" OR "gemalto" OR "intuit"	6810	Major Players and their subsidiaries in digital wallet

#	SEARCH STRINGS	HITS	FILTER DEFINITION
	OR "jp morgan" OR "sprint" OR "research in motion" OR "boku")		
Geographies Covered US (Granted – Full text), US (Applications – Full text), European (Granted – Full text), European (Applications – Full text), WIPO (Applications – Full text), British (Applications – Full text), Canadian (Granted – Full text), Canadian (Applications – Full text), French (Applications – Full text), German (Utility models – Full text), German (Granted – Full text), German (Applications – Full text), Japanese (Applications – Bibliographic), Korean (Granted/Examined – Bibliographic), Korean (Applications – Bibliographic), Other Authorities (Bibliographic)			

TABLE 7: CLASSIFICATION CODES

IPC	DEFINITIONS
G06F	Electric digital data processing
G06K	Recognition of data; presentation of data; record carriers; handling record carriers
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
G06Q 20/00	Payment architectures, schemes or protocols
G06Q 20/32	Using wireless devices
G06Q 20/36	Using electronic wallets or electronic money safes
G06Q 30/04	Billing or invoicing
G06Q 30/06	Buying, selling or leasing transactions
G07F	Coin-freed or like apparatus
H04B	Transmission
H04L	Transmission of digital information, e.g. Telegraphic communication
H04M	Telephonic communication
H04W	Wireless communication networks
USC	**DEFINITIONS**
235	Registers
235 / 380	Credit or identification card systems
455	Telecommunications
705	Data processing: financial, business practice, management, or cost/price determination
705 / 41	Having programming of a portable memory device (e.g., IC card, "electronic purse")
707	Data processing: database and file management or data structures
709	Electrical computers and digital processing systems: multicomputer data transferring
715	Data processing: presentation processing of document, operator interface processing, and screen saver display processing
726	Information security

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