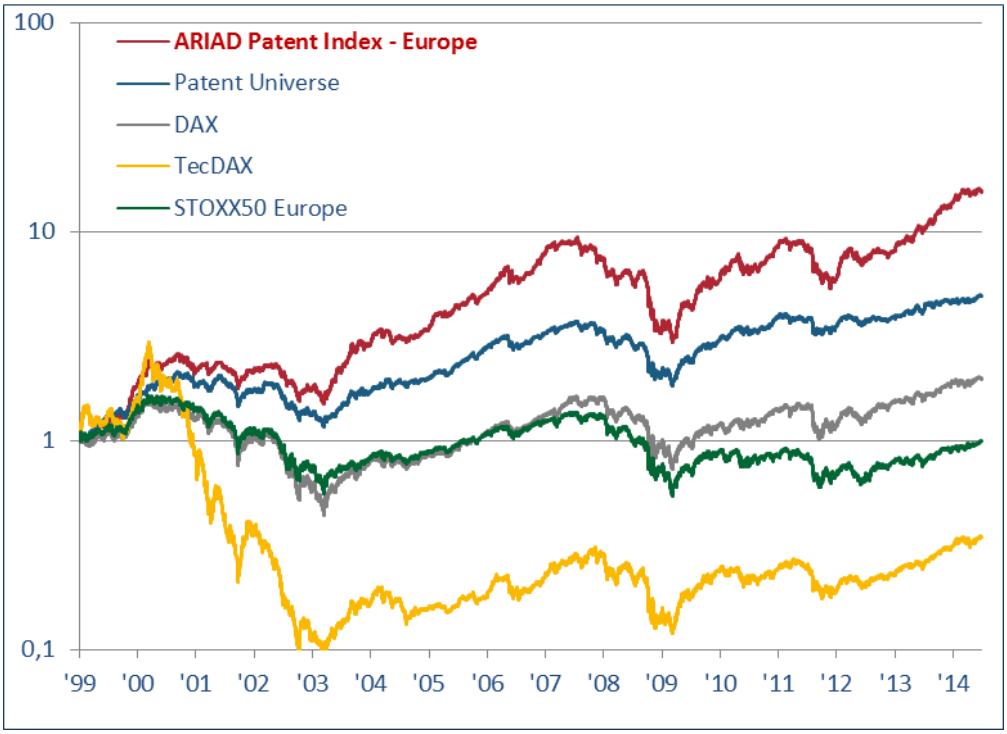
ARIAD

Commercial Patent Data Analysis – Decoding patents' secret messages on company and investment value

An introduction to:

- *using patents as early indicators of business development and future performance*
- *customizing targeting for strategic issues*
- *managing assets by means of scientifically proven patent indicators*
- *achieving impressive results through patent-based valuation and decision-making strategy*



Carsten Lund
Managing Director
lund@ariad.de

Adriano Borges-Rabelo
IP Consultant
rabelo@ariad.de

Executive summary

ARIAD's value-adding services

The rationale of this report is to demonstrate how ARIAD's sophisticated services generate additional value for clients while making use of focused IP advisory and asset management services. More specifically, this paper will introduce ARIAD's research on the **quality of patents** and **trending technologies**.

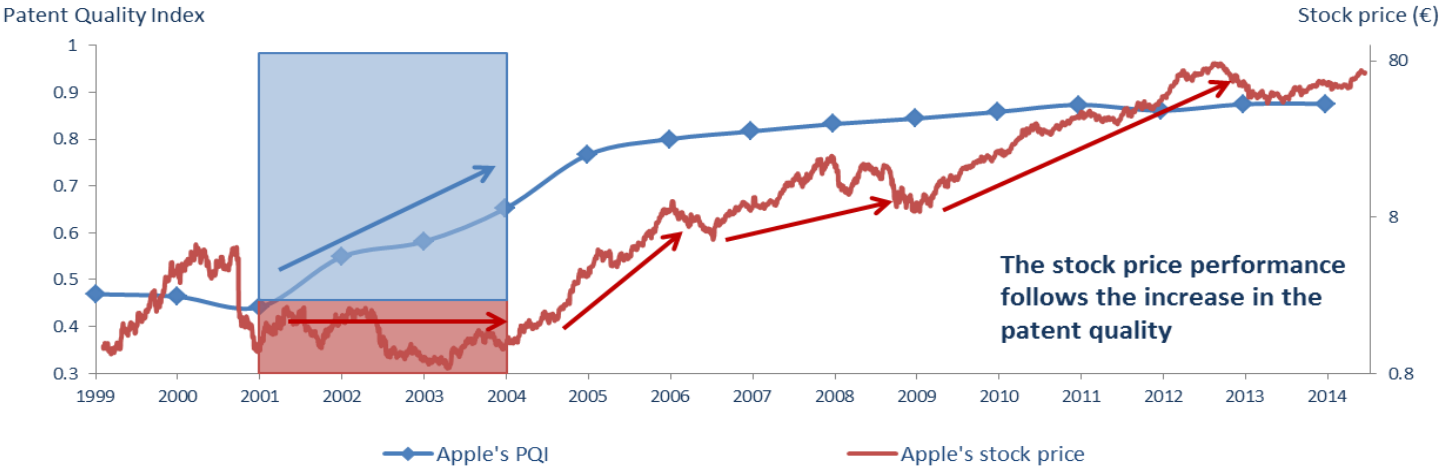
Why IP research matters

The increasing importance of intellectual property and, in particular, patent protected technologies, stresses the need for comprehensive patent data research in the scope of company and market evaluations. ARIAD's innovative analysis tools understand patents as **key value drivers** for a company's business, and are designed to allow for, especially:

Patent data analysis – taking a look behind closed doors

- strictly objective, outside-in patent portfolio analysis, with reproducible results, not able to be influenced by third parties;
- comparison and monitoring of peers and their competitiveness, specially in regards to development of patent quality, participation in trending technologies and existence of technological white-spots;
- verification of business plans and models from a strategic-technological perspective;
- early identification of promising investments / exit opportunities.

Patents are **early indicators** of potential business development and prospects, since they represent technologies that often haven't yet reached the market. An analysis of patent quality and trending technologies is capable of identifying promising companies and technology fields. The graph below is an example of applying ARIAD's Patent Quality Index (PQI) for Apple Inc. It can be seen that Apple's PQI increases for a while before its stock price starts to rise, showing the recognition of an early investment opportunity, or an intelligence alert for competitors. More on this example will be provided further on in this report.



ARIAD's services can be employed at every stage of a company's evolution.

This report will show the importance of intellectual property and explain, with different examples, how patent data research can be applied in your daily business.

Table of contents

1. About ARIAD IP Services

ARIAD IP Services are the **commercial evaluation and analysis of international patent data**.

Technological validation of a company's business plan is a key pre-requisite

Based on a proprietary patent database, ARIAD has developed scientifically proven analysis methods that allow the appraisal of all available global patent information for purposes of business assessment and evaluation. The methods and outcomes do not rely on internal company information, and, therefore, cannot be influenced by third parties, delivering strictly objective and reproducible results for decision makers and investors.

This knowledge is applied by ARIAD in two major areas: asset management and advisory; providing a full spectrum of IP related services.

- **IP Advisory Services**
  - IP Rationale (Targeting)
  - IP Intelligence (Monitoring)
  - IP Due Diligence (Analysis)
- **IP Asset Management Services**
  - Index Advisory
  - Equity Research

A strong foundation for growing success.

Patent data analyses are important not only in the evaluation of companies, but also in strategy planning, business development, risk management and investment selection, among others. With a clear focus on the needs of clients, our advisory services have a modular structure and can thus be seamlessly and flexibly integrated into, e.g., ongoing due diligence, restructuring, or strategy processes.

Our clients include technologically-minded companies, internationally active institutional investors and holding companies (private equity and venture capital), as well as corporate and investment banks, strategically oriented consulting firms, and – in regards to asset management – specialized asset and portfolio managers.

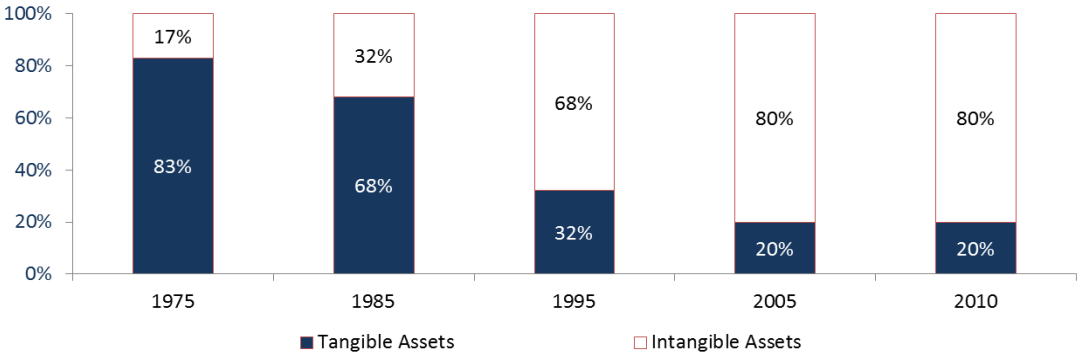
2. Patents, intangible assets and the valuation of companies

"I knew that a country without a patent office and good patent laws was just a crab, and couldn't travel anyway but sideways or backways."

Mark Twain, Novelist & Investor

Patents are a set of exclusive property rights that grant a monopoly over a specific technology for a limited period of time to the assignee (e.g., a company). This monopoly allows the patent owner to secure its competitive position and its future market share, as well as to make use of the invention with the purpose of increasing a company's earnings and, consequently, its enterprise value.

The economic importance of intangible assets, in particular patents and other industrial rights, has substantially increased over the past decades. Long-term studies of the companies listed in the S&P500 have shown that the proportion of intangible assets as part of the company value has increased from approximately 20% in the 1970s to approximately 80% today.



"The war of the future is the war of IP."

Wen Jiabao, former Premier of the PRC

More and more companies are acknowledging the economic potential of their technologies by means of active IP management, and are treating their patent portfolios as important and independent strategic factors for the enterprise value. The financial sector has also been placing increased importance on intangible assets in the scope of company analysis.

However, the accounting and valuation of intangible assets (and specifically technologies) are not easy tasks. Research and development (R&D) activities, that result in patent protected technologies, are often subject to capitalization prohibitions according to different accounting standards.

B/S item	German GAAP [1]	IAS	US GAAP
IP self-invented			
Research expenses	prohibited	prohibited	prohibited
Development expenses	optional [2]	mandatory [3]	prohibited
IP acquired	mandatory	mandatory	mandatory

Notes

[1] According to German commercial code ("HGB"), recently amended by the Accounting Law Modernization Act ("Bilanzrechtsmodernisierungsgesetz")

[2] Capitalization prohibited in case differentiation between research and development expenses is unclear

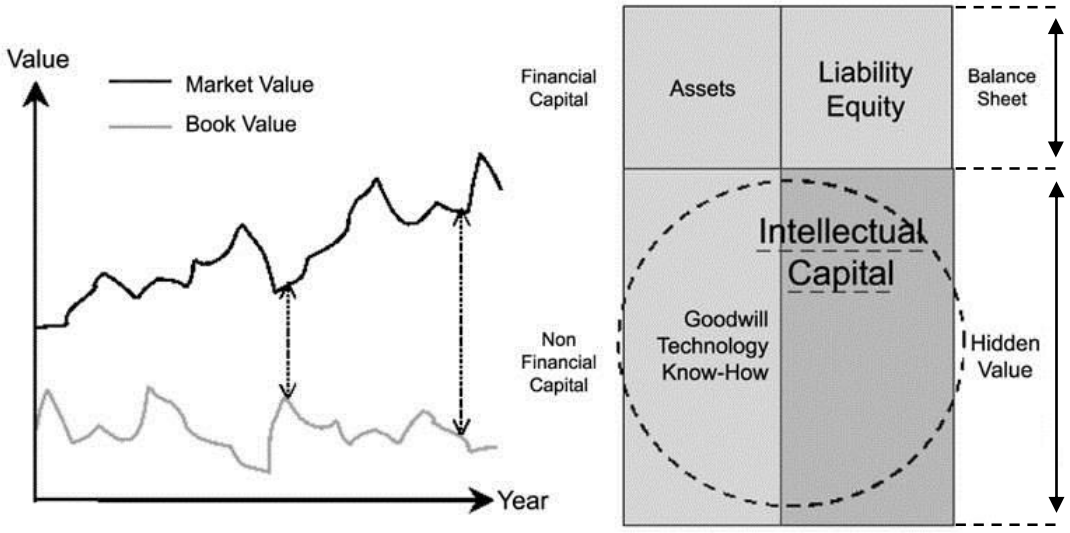
[3] Subject to technical and commercial feasibility tests; otherwise prohibited

"People recognize intellectual property the same way they recognize real estate. People understand what property is. But it's a new kind of property, and so the understanding uses new control surfaces. It uses a new way of defining property."

Michael Nesmith,
Musician and Businessman

As a consequence, the IP balance sheet recording usually does not reflect future business potential adequately, and companies with substantial R&D activity tend to be undervalued. A direct comparison of R&D expenses, although an indication of research activities, does not provide information regarding technology quality and a company's competitive positioning.

The current valuation approaches, which require cash flow calculations, can only be used subjectively in this context, since technologies are not products that could be translated into standard and evaluable price/quantity structures.



Source: Market Intelligence Centre Taiwan (2003)

Nevertheless, when determining an enterprise's fair value, it is of fundamental importance to take intangible assets into consideration. Technologies and patents play a key role in the future development of a company, since they influence the company's product portfolio, its business potential, strategic positioning and, ultimately, its business model.

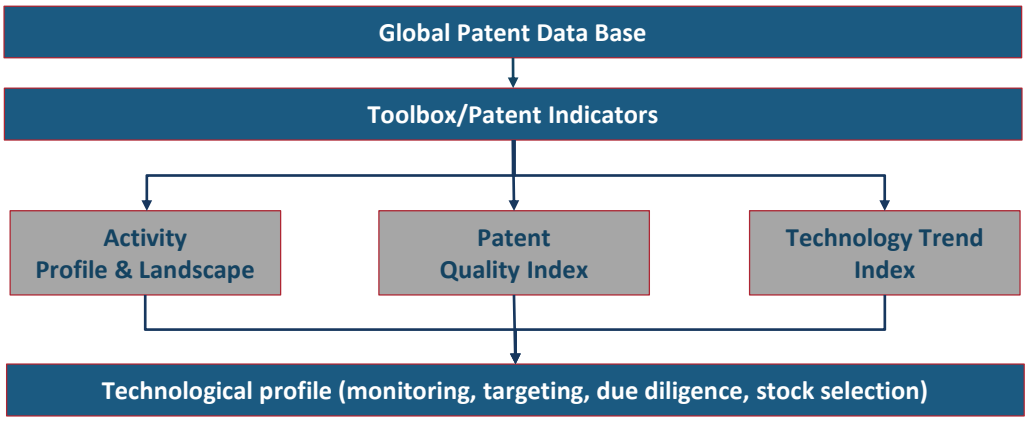
3. ARIAD – your partner in patent data analysis

ARIAD puts you way ahead at the knowledge front by using its analysis tools, as well as unique and steadily refined global patent data base

In this scenario, ARIAD has developed its innovative advisory services with IP analysis methods that allow the understanding of these key value drivers and therefore permit, through an outside-in approach, the well-founded and strictly objective technological assessment, commercial analysis and evaluation of patent portfolios.

The IP analysis methods are based on ARIAD's proprietary global patent database with more than 80 million patent datasets from more than 70 countries, including information regarding patent applications and grants, citations and legal events, among others. The patent data is classified in technologies according to both the internationally agreed IPC standard, and the more detailed CPC classification system, to the extent available in the data provided by the European Patent Office.

Scientifically proven patent indicators provide the basis for the patent data analysis. Besides general patenting activity examination, they allow the comparison of patent quality between different patent portfolios and allow, due to the future-oriented nature of patent data, the retrieval of early information for the identification of new technological trends, markets & competitors.



ARIAD's IP advisory services: your road map to IP insight.

ARIAD's research makes use of this data in a full range of IP **advisory services**, including **monitoring**, **targeting**, and **stock selection**.

The ARIAD patent index concept – a selection of companies based on their score in specific ARIAD patent indicators – substantiates our capability in objectively spotting key value drivers for a company's future performance potential from a technological point of view.

Our analyses and services can be employed not only with the purpose of company/competitors/market evaluation, but also in the context of a comprehensive commercial due diligence by assessment of attributes such as innovative strength, competitive positioning and perspectives of future revenue and development; or in the scope of business development, restructurings

"Embrace what you don't know, especially in the beginning, because what you don't know can become your greatest asset. It ensures that you will absolutely be doing things different from everybody else."

Sara Blakely, Inventor and Founder of Spanx, Inc.

and risk management, in an approach oriented toward strategic-technological matters. ARIAD is therefore a specialized advisor with an interdisciplinary function.

ARIAD‘s analysis methods do not rely on internal company information, making its data strictly objective and not able to be influenced by third parties. The results can therefore be used by decision makers, corporate clients, institutional investors, financial institutions and asset managers.

In summary, ARIAD‘s comprehensive patent data analysis allows a peep behind the scenes to understand the key value drivers triggering a company’s business plan and future business prospects. The following points sum-up the **rationale** behind ARIAD’s services:

- Strictly objective analysis not influenced by management, industry experts or other third parties
- Information regarding how competitive an IP portfolio is and how competitiveness could be enhanced
- Verification of business plans and models from a strategic-technological point of view
- Monitoring of clients‘ and competitors‘ patenting activities regularly to enhance IP intelligence
- Early spotting of new competitors and signals concerning ongoing technological developments
- Identification of promising new investment and exit opportunities, as well as emerging and trending technologies
- Distinguishing between technological leaders, followers and laggards in pre-defined markets

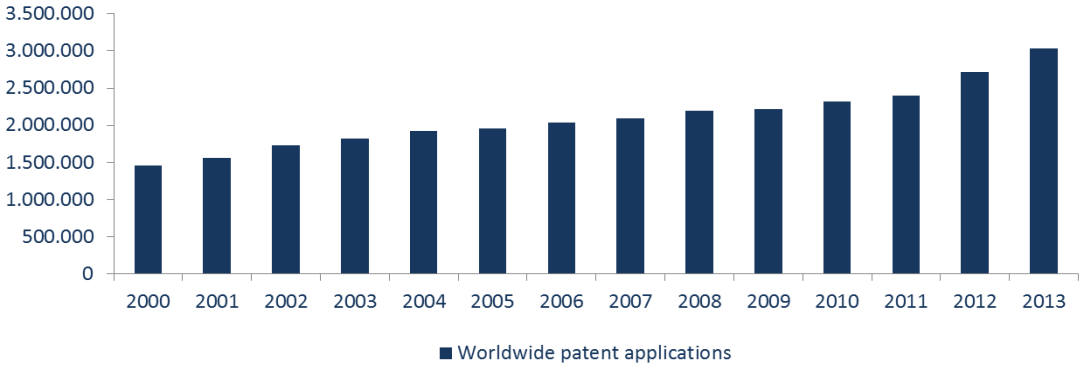
4. Statistics on worldwide patent applications

Below, we depict selected patent statistics that show worldwide patenting trends and are helpful in providing evidence of the significance of commercial patent data research and analyses.

Since the late 1990's, patent applications worldwide have been steadily increasing. The following graph shows the development of patent applications according to their publication year.

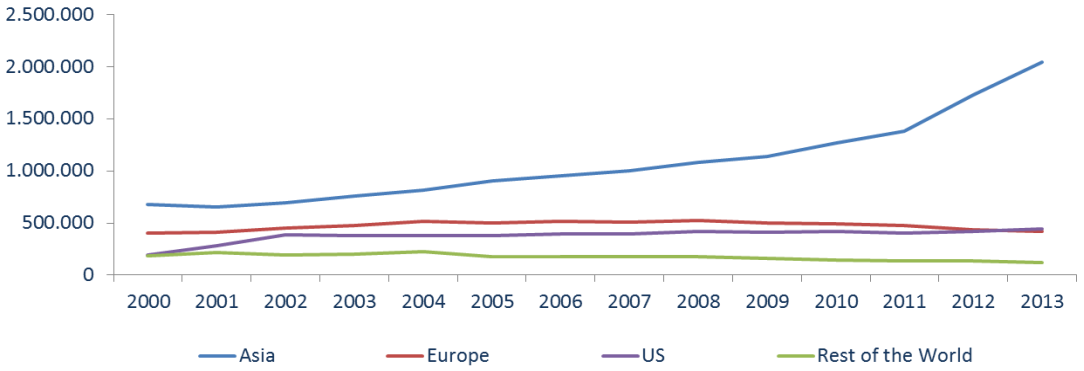
"I don't set trends. I just find out what they are and exploit them."

Dick Clark, Radio/TV Celebrity and Businessman



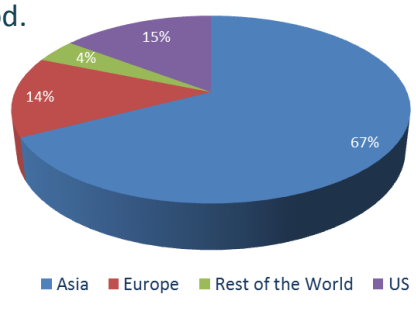
The growth in the number of patent applications is consistent with the increasing importance given to intellectual property rights by companies, and with the studies from S&P500 companies showing the rise of intangible assets in the proportion of total company value. This shows again the necessity of an objective patent portfolio analysis in the scope of company valuation.

The development of patent applications worldwide can be broken down in regions, as shown below.

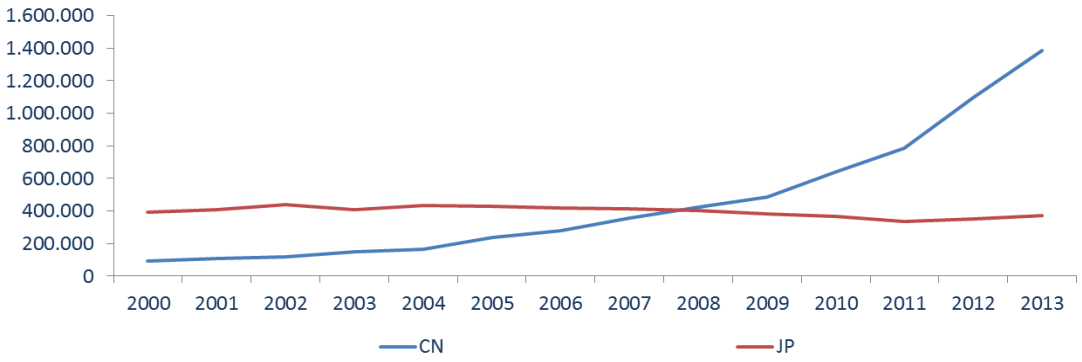


While Europe and the United States present a relatively constant and similar number of patent applications throughout the last decade, with only a slight increase, Asia shows a sharp rise in the same period.

Patent applications from other regions of the world are negligible compared to these 3 main regions. By 2013, the patent applications in Asia corresponded to almost 70% of the worldwide total, whereas Europe and the United States amounted to almost 15% each.



The statistics for each region can also be broken down in countries. For example, the graph below shows the development of patent applications by publication year for Japan and China.



"Only by owning strong scientific and technological innovation capabilities and independent IPRs, could we elevate our country's international competitiveness and obtain respectful international status and dignity from others."

Wen Jiabao, former Premiere of the PRC

It can be seen that, similar to Europe and the United States, Japan has a high but constant number of patent applications throughout the years. China, however, is the driving force in the increase of patent applications worldwide. This can be partly explained by the intensification of research and development in the Chinese economy associated with incentives offered by the Chinese government for national companies to file patent applications. Other reasons include the growth of foreign direct investment in China, and amendments to China's patent law and ownership definition, favoring patent holders and clarifying the assignment of property rights.

These and many other patent statistics, which are important in the analysis of a market or technology sector, can be extracted from ARIAD's global patent database, as a basis for advanced and sophisticated commercial patent data analyses.

5. Patent quality and trend technology approaches to IP analyses

The patent statistics shown on the previous page may grant some understanding of markets and technology sectors, and serve as a trigger for a comprehensive patent analysis, but are too simple to be used as business recommendations. As an example, the increase in the number of patent applications in China shown on the previous page is not necessarily a measure of innovation.

"Whatever is worth doing at all, is worth doing well."

English Proverb

ARIAD's IP services are based on scientifically-proven patent indicators that provide all the necessary knowledge required in thorough IP research on markets, technology sectors and companies. ARIAD's main work streams, the patent quality and the technology trend approaches, will be introduced in sequence.

Patent Quality

An analysis only on patenting activity is not enough to differentiate between patenting strategies (e.g. file & drop) or to conclude on the quality of the patented technology and the company's capability of converting technology into products. Nevertheless, the quality of patent applications and patent portfolios can be assessed on the basis of empirically proven patent quality indicators.

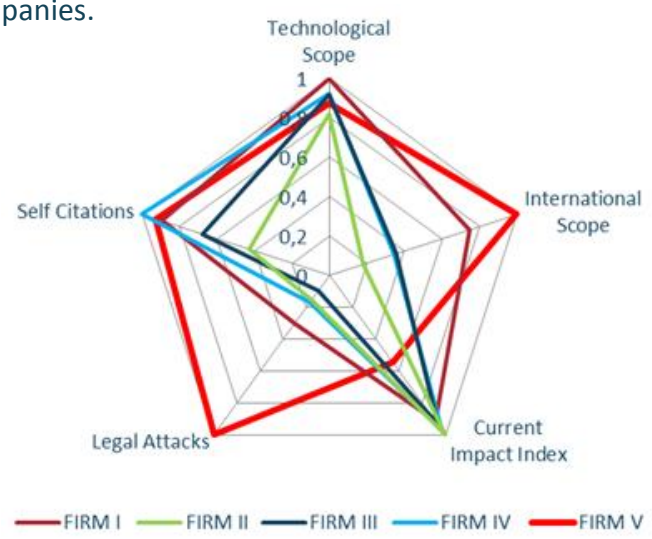
ARIAD's experience in the advisory and asset management businesses has shown that particularly the following indicators, but not exclusively, are essential in determining the quality of patent portfolios:

- **Current Impact Index:** Citation index of a company's recently issued patents. Forward citations honour the sophistication and quality of the cited patent, and consequently its technical and commercial value. Companies with highly cited patents are likely to possess technologies that are central to the developments in their industry.
- **Self Citations:** Similar to the current impact index with the restriction that forward citations are done by the same company who owns the cited patent. It represents the company's R&D efforts in the further development/enhancement of previously self-invented technologies.
- **International Scope:** The geographical territory over which patent grant has been sought and in which protection should be secured. Applicants extend the protection abroad only for their most valuable inventions. It reflects the size of the market in which the applicant may use the technology exclusively.
- **Technological Scope:** The relevance of the invention to different technological fields. The higher the number of fields in which the patent can be deployed, the broader and, thus, the more valuable the patent.
- **Legal Attacks:** Legal objections against the grant of a patent. Since legal disputes are linked to high costs, they reveal the perception of competitors regarding the market potential of the invention.

"One finds the truth by making a hypothesis and comparing observations with the hypothesis."

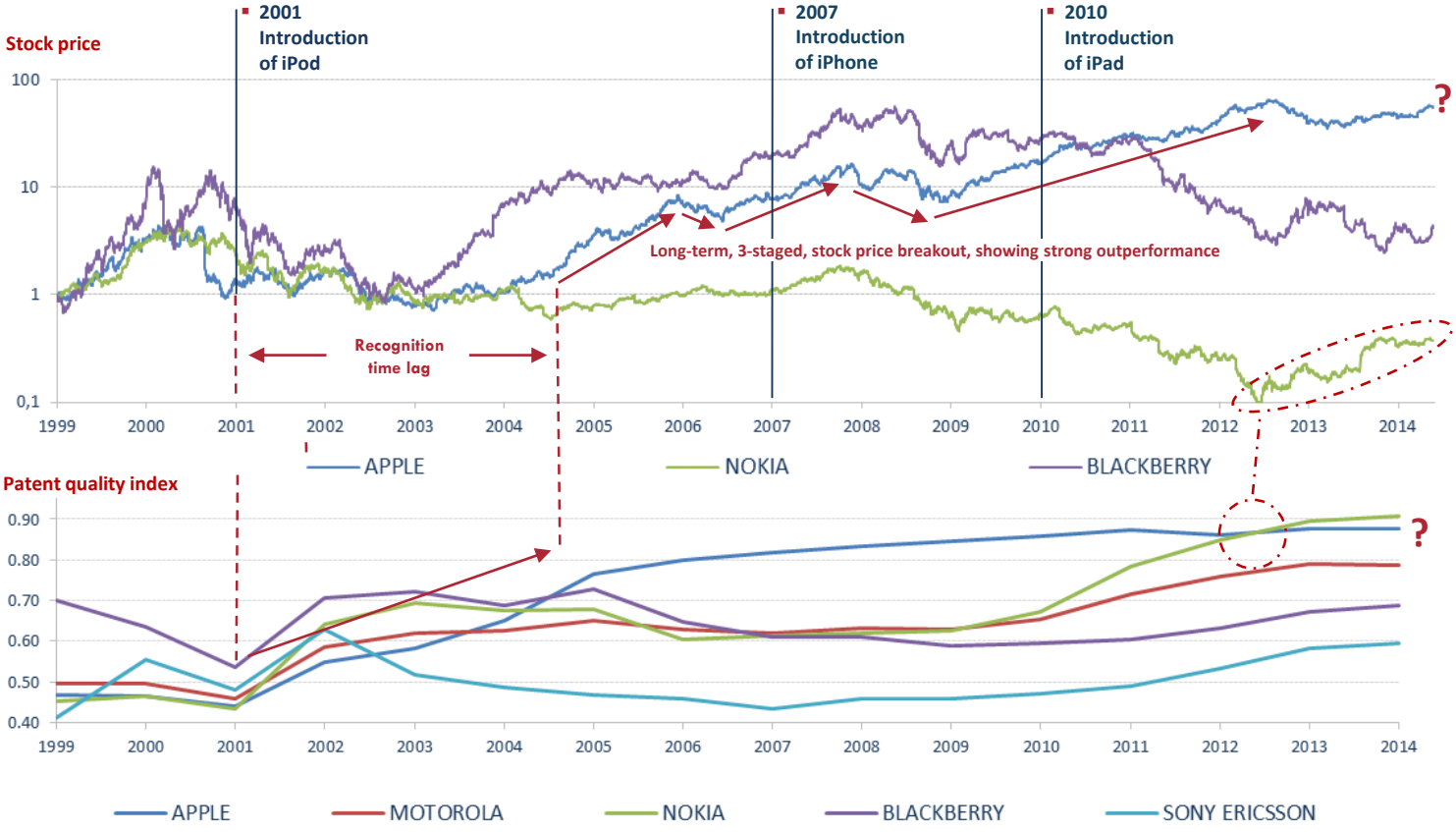
David Douglass, Scientist

ARIAD's Patent Quality Index (PQI) aggregates different dimensions of patent quality indicators, allowing for a comparison between the patent portfolios of different companies.



ARIAD shows you where a company is going before it gets there.

The figure below illustrates the use of the Patent Quality Index. In this example from the telecommunications sector, we compare Apple Inc. with 4 peers. The first graph shows the development of their stock prices, and the second, the development of their PQI since 1999. It can be seen that Apple's patent quality started to increase from 1999 forwards, especially after 2001. This rise can be seen for the years to follow, which is in line with the company's innovative product development including the launches of the iPod (2001), iPhone (2007) and iPad (2010).



"Wherever I see people doing something the way it's always been done, the way it's `supposed´ to be done, following the same old trends, well, that's just a big red flag to me to go look somewhere else."

Mark Cuban, Co-owner of Dallas Mavericks & 2929 Productions, Co-Founder & Chairman of AXS TV

After a recognition time-lag (2001-2004), Apple‘s stock price also increased sharply. The research and development period followed by the increase in Apple’s patent quality could have been spotted at an early stage and tracked by means of **ARIAD’s IP Monitoring**; valuable information for the company, the competitors or possible investors. For example, if Nokia had tracked Apple’s patenting activities back in the early 2000’s, it most likely would have had enough time to develop a counter-strategy and avoid the drop in its patent quality and its stock price.

Since 2010 Apple has showed decreasing patent activity and quality, which was also followed by a decline in the stock price in 2012. At the same time, Nokia‘s increasing patent quality since 2010 is paired with a rise in the stock price. This can also be seen as one of the reasons why Nokia’s Devices and Services business was subsequently acquired by Microsoft Corp.

Don't forget the key!

The important message is that patents can be used as early indicators of business development and companies’ future performances. ARIAD is a successful pioneer in applying this knowledge in its asset management and advisory services.

Trend technologies

Besides the evaluation of the quality of patent portfolios, another important aspect is the analysis of the technology fields in which a company is active and applies for patents. New and trending technology fields offer new products, features or solutions for processes. Retaining a share in these technology areas may grant a company future markets and cash-flows. Conversely, “depleted” technology areas may offer no future perspective, and R&D expenditures in them may be failed investments.

Given that patents are classified in technologies, patent data research allows the identification of both new technology fields, where no patent has been previously published, as well as trending technologies, the ones who have been presenting above average growth in patent applications in recent years.

The advantage of patent data research in identifying trend technologies lies in the fact that it provides this important information for companies and investors at a very early stage. An early investment in such technologies may lead to higher economic returns.

ARIAD has developed important tools that make use of its unique patent database in the performance of trend analyses, either aiming the **comparison of companies** and their market positioning or the **comparison of technologies**. In the first case, particularly, but not exclusively, the following patent indicators have demonstrated to be essential when comparing companies’ activities in trending technologies:

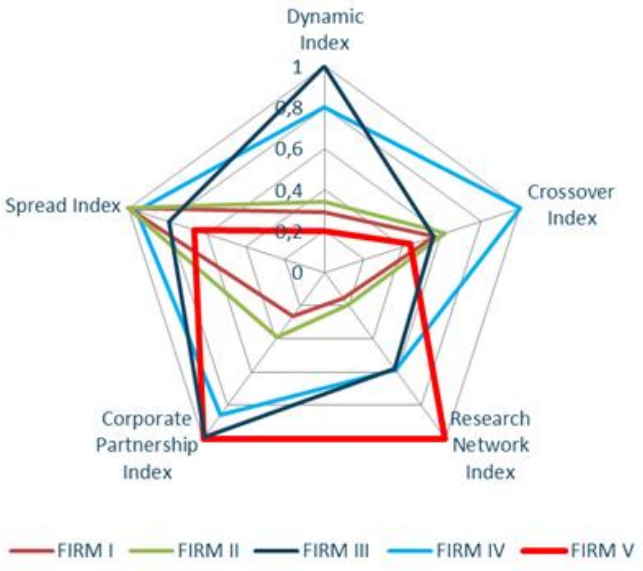
"The keystone of successful business is cooperation. Friction retards progress."

James Cash Penney, founder & former Chairman of J.C. Penney

- **Dynamic Index:** analysis of the share of companies in technology fields with above-average growth in patent applications within a pre-defined peer-group. Dynamic technologies represent growing markets, where companies may obtain a stand-alone position with a protected technological monopoly.

- **Crossover Index:** analysis of the share of companies in significantly advancing technology fields among the global players of a peer-group. Crossover technologies indicate possible disruptive technologies that may result in a change in the whole market.
- **Research Network Index:** analysis of the share of companies in technologies where often companies, universities and research institutes file joint patent applications. Research networks are usually associated with fundamental studies that lead to new technological trends.
- **Corporate Partnership Index:** analysis of the share of companies in technologies where often two or more companies file joint patent applications. Corporate partnerships frequently tend to be the starting point of new disruptive trends.
- **Spread Index:** analysis of a company's diversification in identified trending technologies.

ARIAD's Technological Trend Index (TTI) aggregates different dimensions of trend technology indicators, allowing for the comparison of companies and their strategic positioning regarding their participation in the most promising technology fields. The TTI can be seen as a measure of potential future value creation by a company's patent-protected technologies.



Two knives cut better than one.

When comparing technologies, ARIAD has also developed two approaches – the **IPC Approach** and the **Sector Approach**. The first one is based on the International Patent Classification (IPC), where each patent is classified according to the IPCs it belongs to. Based on ARIAD's trend analysis tools, the most dynamic IPCs in terms of growth in number of patent applications can be identified. The same is valid for the Sector Approach, with the difference that the IPCs there are grouped in technology sectors according to WIPO's IPC – Technology concordance list. The most dynamic technology sectors can be determined in this manner.

The identification of dynamic technology fields is also important where possible targets for market research or investment matters need to be located.

It is important to note that these approaches can be mixed and filtered according to different interests. The examples below are some of the results that can be obtained. The first table is a partial list of the most dynamic technological sectors taking all worldwide patents into consideration.

	Description - Technology sector
S_1	Micro-structural and nano-technology
S_2	Digital communication
S_3	IT methods for management
S_4	Electrical machinery, apparatus, energy
S_5	Computer technology
S_6	Food chemistry
S_7	Medical technology
S_8	Environmental technology
S_9	Semiconductors
S_{10} ⋮ S_{35}	Most dynamic technological sectors

The most dynamic sectors or IPCs could also have been analyzed for specific geographical regions, for example. Combining the sector and the IPC approaches, the next tables show partial lists of the most dynamic IPC main groups for the current three most dynamic technology sectors, i.e. micro-structural and nano-technology, digital communication, and IT methods for management.

We show you the forest through the trees.

	IPC Main-group	Description
I_1	B82Y 5	Nano-biotechnology or nano-medicine, e.g. protein engineering or drug delivery
I_2	B82Y 15	Nano-technology for interacting, sensing or actuating
I_3	B82Y 40	Manufacture or treatment of nano-structures
I_4 ⋮ I_n	Most dynamic IPCs from sector micro-structural and nano-technology	

	IPC Main-group	Description
I_1	H04W 72	Local resource management, e.g. selection or allocation of
I_2	H04W 4	Services specially adapted for wireless comm. networks
I_3	H04N 21	Selective content distribution, e.g. interactive television, VOD [Video On Demand]
I_4 ⋮ I_n	Most dynamic IPCs from sector digital communication	

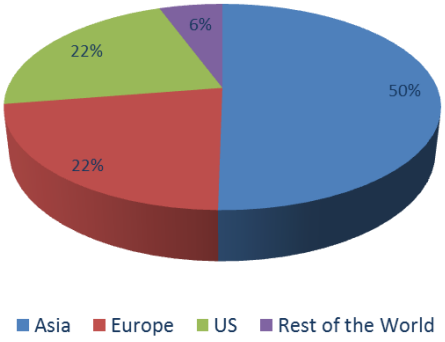
	IPC Main-group	Description
I1	G06Q 30	Commerce, e.g. shopping or e-commerce
I2	G06Q 40	Finance; insurance; tax strategies
I3	G06Q 20	Payment architectures, schemes or protocols
I4 ⋮ In		

Most dynamic IPCs from sector IT methods for management

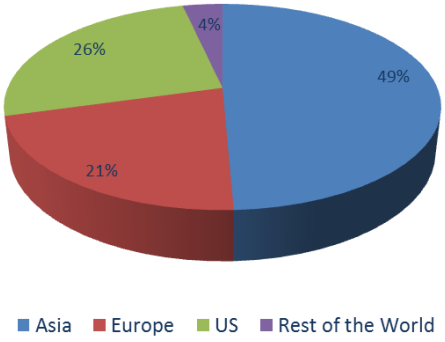
Define your target carefully so you do not miss your mark.

In the same way that the evaluation of dynamic sectors could have been done for specific regions, the geographical distribution of patent applications for defined dynamic sectors or IPCs can be examined. The following diagrams depict the geographical distribution of patent applications for the current most dynamic technology sector according to the country of patent registration (**where**) and the country where the patent applicant is headquartered (**who**).

Geographical distribution of patents according to country of registration



Geographical distribution of patents according to country of applicants' headquarters



The investigation can go on in a number of manners. **ARIAD's IP Rationale** is a **targeting** tool designed to identify companies that actively file patents according to specific criteria. The table below provides a partial list of the most active companies/organizations in the current most dynamic technology sector, sorted by number of patent applications.

C1	BOSCH GMBH ROBERT
C2	SAMSUNG ELECTRONICS CO LTD
C3	COMMISSARIAT ENERGIE ATOMIQUE
C4 ⋮ Cn	

Most active companies within most dynamic technology sectors

Several other criteria/filters can be used to generate similar lists or to sort them in a different way. For example, the list could be created for:

- different technology sectors,
- different IPCs, or
- specific geographical regions.

It could be filtered to show:

- only companies,
- universities,
- research institutes, or
- private persons (inventors).

Other sorting criteria are, for example, according to:

- the companies' overall Patent Quality Index, or
- the percentage of patents in the companies' patent portfolio in the technology sector in question.

It is worth mentioning that the latter approach is therefore capable of targeting companies that are specialized in a certain technology field, instead of only large corporations.

The next tables present partial lists of the most active companies and organizations in the currently most dynamic technology sector, according to the country of patent registration and sorted by number of patent applications.

ASIA

C1	SAMSUNG ELECTRONICS CO LTD
C2	SEIKO EPSON CORP
C3	CANON KK
C4	
⋮	
Cn	

EUROPE

C1	BOSCH GMBH ROBERT
C2	COMMISSARIAT ENERGIE ATOMIQUE
C3	FRAUNHOFER GES FORSCHUNG
C4	
⋮	
Cn	

US

C1	IBM
C2	UNIVERSITY OF CALIFORNIA
C3	SAMSUNG ELECTRONICS CO LTD
C4	
⋮	
Cn	

Customization is king.

It can be seen that ARIAD's services and analysis tools can be combined in a variety of ways, allowing for a thorough custom-made patent analysis, according to the specific necessity of our clients.

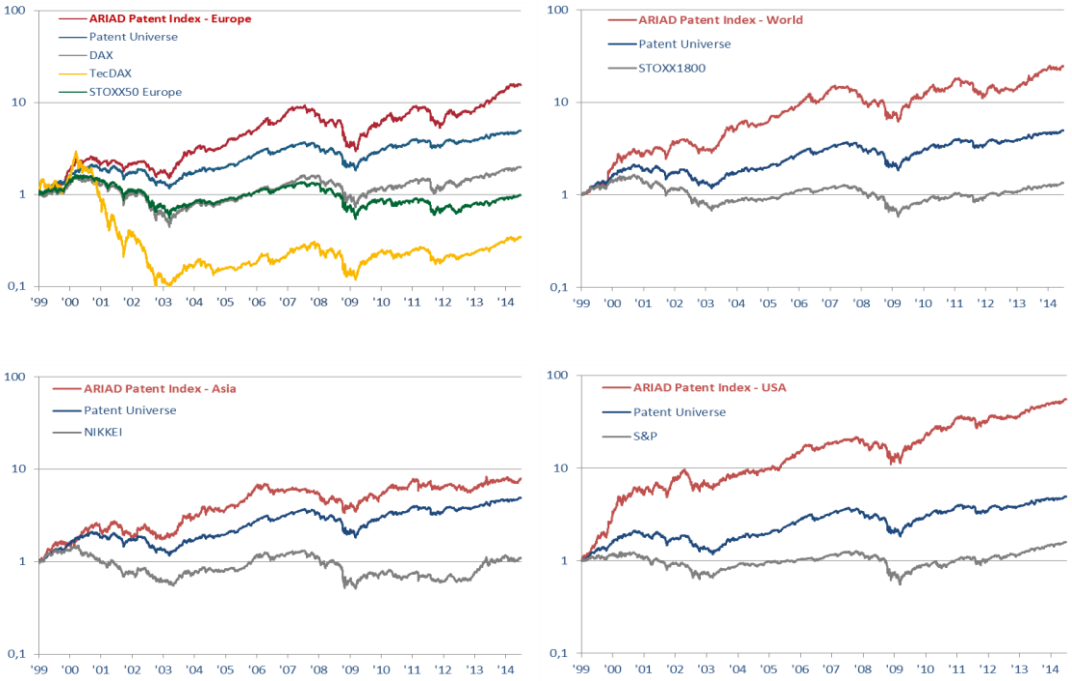
6. Proof of concept: The ARIAD Patent Index Family

Based on some of the concepts introduced above, we developed the ARIAD Patent Index Family as one of our asset management strategies. Selecting a specific combination of patent quality indicators in order to create a rating of publicly traded companies, ARIAD is able to identify companies with high quality patent portfolios which are undervalued in the market. The ARIAD Patent Index is a selection of the best companies according to this ranking.

The graphs below depict the development of the stock prices for the ARIAD Patent Index (with yearly reallocation and rebalancing) in comparison to regional markets as benchmarks.

"It is an immutable law in business that words are words, explanations are explanations, promises are promises, but only performance is reality."

Harold S. Geneen, former president, CEO, & Chairman of ITT Corporation



Portrayed are the indices for global companies, the Index World, as well as regional indices (Index Europe, Asia and US). The Patent Index outperforms the benchmarks in all cases by a great margin. The successful backtesting, in which problems such as survivorship bias were taken into consideration, as well as the real-time tracking in the past 2 years, present impressive results.

ARIAD Patent Index can also be implemented for different regions and specific technology fields (e.g. Asia + Semiconductors, Europe + LED), according to the strategy to be followed. It is possible, for example, to create an index according to trend technologies, showing the exchangeability of ARIAD's analysis tools and services.

"See things in the present, even if they are in the future."

Larry Ellison, Co-founder and CEO of Oracle Corporation

The outperformance of ARIAD's patent index is proof of concept, showing that our analyses and, in this case specifically, the patent quality indicators can be used as early indicators of a company's future performance and business development.

Therefore, **a ranking of companies could also be built for non-quoted companies**, since these companies are also prone to present positive results in the future. This would be **important information** for institutional investors, such as Private Equity houses and Venture Capital funds, searching for investment targets.

The ARIAD patent index concept underlines our strong emphasis on spotting key value drivers for a company's future performance potential from a strictly objective technological point of view.

7. IP Advisory Services pertinent to typical client categories

8. Disclaimer

This report has been prepared by ARIAD exclusively for your benefit and internal use. This presentation is incomplete without reference to, and should be viewed solely in conjunction with, the oral briefing provided by ARIAD. This report is proprietary to ARIAD and may not be disclosed to any third party or used for any other purpose without the prior written consent of ARIAD.

The information and material presented to you by ARIAD in this document are provided to you for information purposes only and does not constitute an offer or commitment, a solicitation of an offer or commitment, or any advice or recommendation, to enter into or conclude any transaction. This document may not be reproduced in whole or in part or made available without the written consent of ARIAD. The distribution of this information may be restricted by local law or regulation in certain jurisdictions. All information and opinions presented in this document have been obtained or derived from sources believed by ARIAD to be reliable, but ARIAD makes no representation as to their accuracy or completeness and ARIAD accepts no liability for loss arising from the use of the material presented in this document unless such liability arises under specific statutes or regulations. This document is not to be relied upon in substitution for the exercise of independent judgment and for consultation of an external accounting and/or legal firm. ARIAD is not an accounting or legal firm and is not authorized to advise directly on accounting and/or legal aspects and cannot give accounting and/or legal advice.

This material has been prepared by ARIAD based on assumptions and parameters determined by it in good faith. The assumptions and parameters used are not the only ones that might reasonably have been selected and therefore no guarantee is given as to the accuracy, completeness or reasonableness of any such quotations, disclosure or analyses. A variety of other or additional assumptions or parameters, or other market factors and other considerations, could result in different contemporaneous good faith analyses or assessment of the transaction described above. Past performance should not be taken as an indication or guarantee of future performance, and no representation or warranty, express or implied, is made regarding future performance. Opinions and estimates may be changed without notice. The information set forth above has been obtained from or based upon sources believed by ARIAD to be reliable, but ARIAD does not represent or warrant its accuracy or completeness. This material does not purport to contain all of the information that an interested party may desire. In all cases, interested parties should conduct their own investigation and analysis of the transaction(s) described in these materials and of the data set forth in them. Each person receiving these materials should make an independent assessment of the merits of pursuing a transaction described in these materials and should consult their own professional advisors.