Enhancing a Firm’s Strategic Intellectual Property Management System – The Role of Patent Quality

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Knowledge is supreme. Playing the knowledge game is a double edged sword and requires multi dimensional skill to engage prescience with strategic intent. Traditionally, strategic decisions in the intellectual property (IP) context have primarily been uni-dimensional towards maximising monetary value of the IP portfolios created. Research and literature has focussed on valuation of IP as a proxy for IP quality. However, there is a clear cut difference between IP quality and its valuation. The recent acquisition of Nortel Networks’ IP (primarily patent) portfolio by a consortium of firms for US$ 1.5 billion is a live case to have a better understanding of how IP is both evaluated and valued. A shift in the approach towards technical quality helps to first reduce the surrounding noise of market valuation and relate directly to the core competency of a technology firm, which is developing technologies. Many a time, valuation supersedes validity, leading to mindboggling settlements later into the day. In the valuation route to quality, firms (both licensor and licensee) consistently face cases that reflect the dilemma of validity and valuation of the IP generated. In this work, the authors reason the necessity for firms to emphasize on the technical quality of their IP (patents). High technical quality of its patents provides a firm with multiple benefits - foundation for the firm to leverage over longer time, build on core competencies to achieve its strategic intent and have clarity of its contribution by being legally valid and technically valuable to be licensed.

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The Setting: An Introduction
Some of the trendsetting technologies have been bordering on patentable subject matter and have had to face a continuous challenge from the society and competitors through landmark cases. Examples include the first ever business method patent provided to State Street Bank, the one click e-checkout patent to Amazon which literally put Barnes and Nobles out of action and the genetically modified oncomouse. The recent relook at software and business method patents in USA (which incidentally has been the technology and services envelope pusher) reiterates the need to have a current discussion on drivers of business – ‘valid’ patents on technological innovations and ‘deemed to be valuable’ patents. The emphasis on ‘deemed to be valuable’ patent includes examples from the not so past like the near shutdown of Research In Motion (RIM)’s blackberry service due to a series of litigation by non practising entity (NPE). RIM paid nearly US$ 612 million in order to have an out-of-court settlement with the NTP on the litigated patents which were later re-examined and found to be ineligible.

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Other examples include the current case of Google v Oracle on the former’s Android platform (as of June 2012, Oracle lost) and Apple v Rest in the smart phone segment, setting the new benchmark in the telecommunications patent war.

The Current Challenge
These are changing times – complex technologies and industries like telecommunications, semiconductors, which were not dependent on IP earlier are the current leading users, while the traditional discrete technology holders have been pushed to the sidelines. The traditional approach to IP by firms has been to expand the role of intangibles by leveraging them through a wider spectrum of financial options – IP auctions, IP based exchange systems, patent trolls, IP royalty based business models, etc. All of these approaches are financial model innovations designed to unlock the monetary value of the intangible created, owned and protected. However, as the chief officer (CEO, CTO, CIO, CIPO, etc.), especially in a technology driven firm, it is necessary to understand the cost implications of such an approach. The patent signal to IP valuation noise ratio
Emerging new IP driven business models like NPEs, commonly known as patent trolls, pure ideation/design focussed firms (fabless semiconductors) have reiterated the issue of balancing quality with valuation in real time along with the urgent want of corrective guidance. Hence, one needs to identify methods that help target the primary principle of IP management, namely, to derive the technical quality of an IP created independent of its estimated monetary value. A major point of departure stressed in this work is to bring out to the fore, multiple strategic roles of an IP that is not captured in a traditional valuation approach. Irrespective of the nature of the entity (firm/research lab/academic), what does it mean to be strategic in terms of IP? Is it a limited horizon focus of securing financial gains or a larger aspiration to lead through strategic IP management systems?

**Intellectual Property Management System**

Intellectual property management system (IPMS) is defined as a policy and managerial tool that helps in accumulating and ensuring the value of a rich IP portfolio. The responsibilities of IPMS include IP generation, IP portfolio management, its valuation based on competitive assessment and strategic decision making. Understanding the various signals of IP is central to the defined functions of IPMS in a firm. The success of IPMS is judged in terms of it being the driver of synergy between a firm’s technology and product roadmaps, and its related role in enhancing deliverables related to new product/technology development and deployments. This includes traditional licensing, standardization push and defensive patenting as prior art. With such strategic imperatives, IPMS is seen as the control mechanism in a dynamic capability structure that leverages the available resources and capabilities of a firm. Here, the control mechanism refers to balancing the multiple strategic roles that is signalled by IP. The output quality and in the long run, the firm’s outcome in terms of capability is the nearest independent measure. Taking analogy of a complex system, IP quality is the pulse of a dense central innovation system that IPMS creates in a firm.

The role of IPMS is depicted in Fig. 1. Delving head on, the strategic function of a CIPO (Chief IP Officer) is to position IPMS around two indispensable strategic manoeuvres – one, to create new knowledge and two, to create new business. Practical relevance of IPMS based strategies would include the firm’s decision to do R&D, identify the relevant set of technologies and complements (IPs) that are required for a particular product or technology platform. The core aspect of IPMS lies in identifying ‘essential’ and ‘applicable’ IPs based on technology and IP landscape analysis.

**Why IP Valuation is not IP Quality**

The equation currently followed is IP valuation = IP quality. IP valuation solely focuses on the revenue generated through its licensing or sale. However, one needs to understand that the current valuation of IP is principally driven by licensing strategies. Licensing is a strategic interaction in which firms exploit (licensor) and explore (licensee) their stakes. Licensing revenue acts as a proxy for patent valuation and is significantly impacted based on the licensing strategies followed and information asymmetry between the licensor and licensee. Current valuation and licensing literature discusses strategies like exclusive, non-exclusive or regional licensing, one time payoff, unit sales based royalty, revenue sharing, R&D costs cum licensing, and milestone based valuation.

There also exists variation in the licensing methods of public universities and other IP holders. Each such strategy leads to a different valuation both within and across industries and sectors. Coupled with this, the strategic relationship between firms also determines the licensing style. Leaving aside the mathematical
assumptions and models for valuation, these multitude of licensing strategies create variability which are difficult to control. It raises concerns when used as a single uniform measure of an outcome. What is required is an approach that relates closely with the multiple strategic use of a patent.³

Limiting the IP to patents for the sake of discussion, the patent system is designed in such a way that it benefits all aspects of the rationality supporting it – access to new technologies, creation of infrastructure, raising innovation capability of the society, acting as an incentive system and so on. These multiple strategic applications of a patent make it very difficult to have a single objective measure of its impact measured through valuation. Hence, measuring the quality of such multiple contributions ought to reflect the greater common good of innovation that occurs.

Market valuation or licensing revenue generated from patents aligns with the economic theory of the patent system and is one amongst the various other theories⁴ present and leveraged by innovators and innovation policy makers. Valuation is one such measure of the impact of patents on society and due to the various roles of patents aforementioned, it does not provide a complete perspective on the quality of the contribution. Patent valuation scores indicate the expected returns at the time of licensing and make it a constant for the future while patent quality scores are dynamic and provide the current status.

The authors have specifically focussed on the technical quality of a patent which is a valid output measure for firms investing in R&D. A focus on technical quality will automatically lead to better valuation and the outcome of improved and cutting edge technological capabilities.

The Emerging Role of IP Quality

The IP quality is related to the strategic intent of a firm, providing a tactical flavour to the role of IP quality in IPMS – the emphasis being on technical quality rather than short term magical financial returns. For discussion purpose, the authors limit it to patent quality (PQ) taking into consideration the comprehensive definition on PQ provided.⁵ In this work, PQ is considered as a measure of the effective use of scientific and technological advancements towards creating efficient innovations that propel the economic advancement of all patent system stakeholders by explicitly conforming to accepted technical characteristics and statutory requirements of a granted patent.

The strategic role of a patent is not limited to its protective ownership. Due to a patent’s multiple signalling, a multi dimensional role exists for a patent and hence PQ should be measured through a coordinated multi model synergistic approach.⁶ This requires identification of as many non redundant measures that cover these strategic roles as possible. A firm which has decided to play the patent game has to become conscious of the fact that technology is its fulcrum. By emphasizing on technical quality derived from the basic patent characteristics, a firm can reduce market uncertainties in the use of its patents – from creation, to application and finally licensing⁷ and its dependence on patent grant quality to justify and leverage its patenting strategies.⁸ The firm thus becomes proactive in identifying, managing and licensing patents, of and for its portfolio.

The CIPO’s role would be now to identify suitable weights for appropriate measures as per the strategic context and use the PQ model to compute the final PQ score. The final PQ score that integrates the various measures of a patent helps a firm to retrospect on the quality of its innovations and identify relevant quality patents as per the technology/product characteristics required for licensing or acquisition. Irrespective of the context to either create or acquire (license) patents, knowing the PQ score provides a reference point for designing the appropriate patent strategy. Such PQ models should be dynamic in order to be extendable to related and disruptive technological innovations that occur and also cover the portfolio of patents created. This helps the firm to identify quality of patent collaboration/acquisition that it intends to complete.

Such analysis coupled with nature of the technology being created, enables the CIPO to design a practical and sustainable patent strategy leading to consistent creation of high quality patents. As a CIPO, it is not enough to have a collection of measures that determines the quality of the firm’s output (patents in this case). It is also necessary to concentrate on their strategic relevance and implications so created. Each PQ measure is determined by its two strategically relevant components; (i) the nature of firm’s relationship with external entities for every measure of PQ and (ii) the time of applicability for each such measure. The relationship with external entities can be at the network level, at the level of a single external
firm or completely absent. The time of use relevant for each measure has three phases, namely, at the time of application, during patent prosecution and post grant. In Table 1, the types of strategic relevance discussed above are correlated with the three patentability criteria. The firm’s relationship and time of applicability are common to all three criteria. The time of applicability helps the firm to decide the time instant at which the relevant measures are to be emphasized. This helps the firm to utilize its resources appropriately by having deeper focus on specific measures.

### Strategic Implications of PQ

It can be seen that there are measures which depend on a combination of interfaces (at both, firms’ relationship and time of relevance) such as licences, peer reviews and applicability. Such measures are identified as the link connecting the firm with its external environment. These measures are strategically more important to be emphasized and managed as they generate synergetic effects (benefit or loss). These measures and their respective weights should be of strategic focus for the firm and emphasized by the CIPO. The role of CIPO would then be to align this weight segmentation with the firm’s strategic intent and capabilities. The strategic role of PQ in a firm can be structured at two levels – macro, identifying how the PQ model helps in selecting relevant IP for a firm’s expansion and micro, identifying the role of each measure that is used to determine the final PQ.

### Macro – Multilevel Role of PQ

The PQ score has a role from the perspective of – the independent patent, the patent portfolio created and the innovation platform. A firm can plug its actual data into the PQ model and determine both the quality of its individual patent and portfolio. A firm with good number of patents will then be able to identify the right combination of PQ measures leading to better quality patents. This helps the CIPO give relevant directions and policy recommendations both to its R&D team and technology strategy team with regard to the firm’s position and stake in the technical environment. As an internal intelligence application, this helps to identify competitor firms that ‘game’ their PQ score by simply raising the count of certain measures. Firms present in complex technologies have the choice to either individually promote their patents or become part of a patent pool.

The cost of targeting high quality patents due to the various related uncertainties of patenting is countered with a portfolio approach (quantity route) by firms, especially in complex technology domains. The final score and rank of the patents identifies the technology position of a firm in the industry. Platform is an abstraction layer in the design flow that facilitates a number of possible refinements into a subsequent abstraction layer in the design flow. Moving forward from technology platform and product platforms, the authors propose a new platform termed as innovation platform, based on the patent portfolio held by a firm. This innovation platform is a superset and a combination of both fundamental technology patents and product platform patents. The PQ measure of the patent portfolio acts as a robust indicator of the innovation platform that can evolve around the patent generated.

### Micro level – PQ Measures and Their Behaviour

At the micro level, the CIPO now has the problem of choosing amongst a multitude of measures that determines the PQ. Focussing only on measures having the highest weights does not explore the dynamics of the other measures and defeats the strategic multiple roles that a patent arms the CIPO with. In Table 2, the strategic relevance parameters described earlier are correlated to two PQ measures. The number of licences generated as the measure is taken as an illustrative example. $W_l$ is the weight for the licence measure that determines the utility of a
particular patent. The licences generated depend on activities of the self firm and also on the external entity that reciprocates. In cases of pooling, the network effect (participants in the pool and the role of the patent pool manager) replaces the external entity. On the time of applicability scale, the licence measure comes into picture, post grant of the patent.

Now, in case of normal self portfolio analysis, the CIPO can use the default weights. In the case of licensing in, the applicability is more driven by immediate use while during licensing out, the firm has to focus on its essentiality. Based on the nature of the transaction, the CIPO can give a suitable ratio of the single weight for the applicability measure. This logic can be extended to other measures having multiple relevancies for their weights to be appropriately proportioned. Such flexibility gives a clearer picture for the entity during protracted licensing and negotiations for acquisition. The CIPO’s role is to determine the scale for essentiality and applicability measures as per the licensing stage and use this along with the weights. Historical data, both of the firm and the trend in the industry need to be analysed for the entity to come out with the scale.

Another example of a single measure is prior art. The patent system has to support both fundamental and valid modifications of immediate utility innovations (within the overall patentability requirements). By increasing the prior art being cited, the patent opens up the opposition sluice gates. It also helps in reducing the further oppositions by showing the prior art a priori. This is the trade-off that an IP strategy should examine along with the nature of the innovation being done.

Conclusion
The acceptance of any framework is dependent on its generalizability – applicable across multiple industries or has the capacity to be tuned as per industry characteristics. The authors propose an approach that helps the CIPO to position PQ, which is generic (industry neutral), comprehensive and captures by design, the paradigms in the innovation processes. Valuation is a purely economic perspective which skews the firm to start focussing on technically valuable patents with validity being placed at risk. The approach to PQ has been explained from the strategic management of technology perspective and is based on the premise of having a fundamental legal compliance. The blind emphasis on the economic rationale for organization of innovation and R&D has seen examples of over-simplified and skewed approaches between value and validity. By evolving models to measure and emphasize technical quality, this article is an attempt to structure and convey the legal implications in a practical language. This is a paradigm swing to subtly capture and balance the synergy between legal perspectives and technological growth in a format that enables the firm (the risk taker) to benefit albeit on a long term strategic perspective. This synergy created by PQ measure acts as the seamless bind amongst the three functions of IPMS – create, protect and leverage.

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References
6. Others include Locke’s theory of labour, Hegel’s social relationship, North’s Resource allocation, Arrow’s reward mechanism, Merges’ public welfare focus on intellectual property rights.