

IPO[®] REPORT

REPORT DATE: January 12, 2010

Patent Number: **US07599866**

Filed Date: **12/23/2003**

Priority Date: **12/23/2003**

Issued Date: **10/06/2009**



OCEAN TOMO[®]
PATENT RATINGS[®]

IPQ Report

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 Current Status: **IN FORCE**



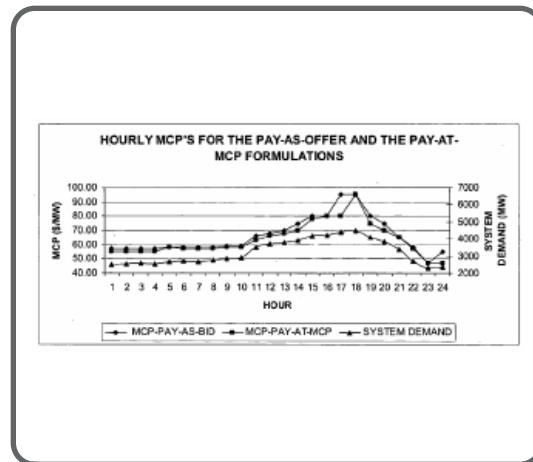
IPQ[®] Score: **92.80**
 Overall Rating: **B-**
US07599866

Named Inventor: **Yan; Joseph H. (+8)**
 Assignee (orig):
 Assignee (crnt):
 Security Holder:
 Attorney or Agent: **Sheldon Mak Rose & Anderson**

Simultaneous optimal auctions using augmented lagrangian and surrogate optimization

Primary Field: **COMPU/SOFT**
 US Class/Subclass: **705/37 (+2)**
 Class Description: **Data processing**
 Int'l Class / SIC: **G06Q/null**

Number of Claims: **12 (2 / 10)**
 Number of Related US Pats: **0**
 Number of Related Int'l Pats: **0**
 Number of Forward Citations: **3**



Summary of Scores & Ratings

Intellectual Property Quotient:¹ **92.8**
 Overall Percentile Rank:² **38.2**
 Overall Patent Rating:³ **B-**
 Nominal Expiration Date:⁶ **12/23/2023**
 Remaining Life Expectancy:⁶ **13.9 Yrs.**

Scores & Percentile Rankings²

Factor ⁴	Score/Rank	Raw Score ⁵	Percentile Rank by Group and U.S. Class ²				
			Overall	Field	Class	Subclass	Assignee
TECHNOLOGY		1.22	78.6 %	62.80 %	42.2 %	51.4 %	58.8%
DISCLOSURE		1.21	78.1 %	69.5 %	49.1 %	55.7 %	84.3%
CLAIMS		0.71	8.7 %	6.6 %	10.7 %	10.3 %	5.3%
PROSECUTION		0.81	20.7 %	12.7 %	19.4 %	19.5 %	7.1%
OTHER		1.70	98.4 %	98.7 %	98.3 %	98.1 %	99.8%
IPQ SCORE ¹		92.80	38.2 %	19.9 %	23.0 %	27.5 %	15.2%

Life Exp. & Survival Probabilities⁶

	M1			M2			M3						
	Y0	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	Y11	Y12
Life Exp. (Years)	15.9	14.9	13.9	12.9	8.4	7.4	6.4	5.4	5.5	4.5	3.5	2.5	2.2
Exp. Survival					92%				73%				52%

IMPORTANT NOTICE

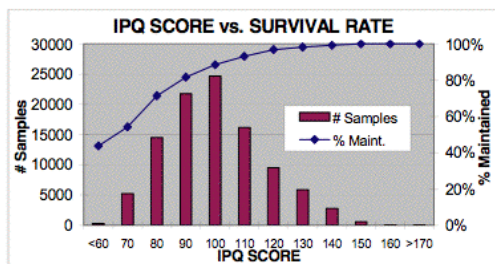
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IPQ REPORT



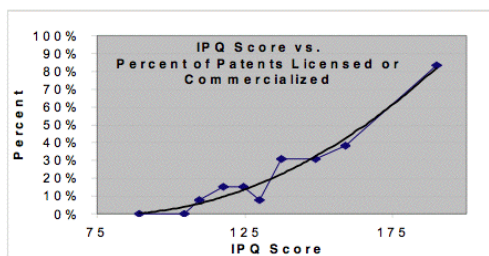
1. IPQ® - IPQ® is a computer-generated numerical ranking or score based on a multi-variate regression analysis of a number of identified predictor variables (patent "metrics") determined to have significant statistical correlation to patent maintenance or mortality rates.

Scores are calculated completely objectively for each patent according to the determined metrics. Raw scores are mathematically adjusted to a nominal expected score of 100. Adjusted scores are akin to the familiar IQ score for rating human intelligence. Thus, a score of 100 generally corresponds to an expected normal or median patent quality, while an IPQ score higher or lower than 100 indicates an expected above-average or below-average patent quality and/or value probability, respectively. IPQ scores are directly predictive of patent maintenance/mortality rates.



The above graph is a probability distribution of maintenance rates for a sample population of 100,000 utility patents issued in 1996. As illustrated by the graph, observed 4th year maintenance rates generally increase with increasing IPQ scores. Patents scoring 60 or less on the IPQ scale had an observed 4th year maintenance rate of 43.7%, compared to observed maintenance rates of 100% for patents scoring 150 or higher. The average maintenance rate for all patents in the sample population was 85.2%.

IPQ scores may also be predictive of patent commercialization rates and likely value, as illustrated by the graph below:



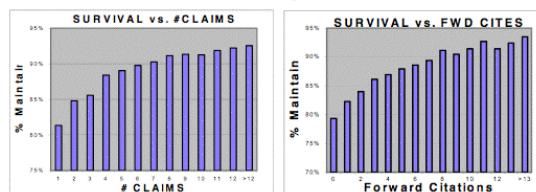
The graph shows the results of a double-blind study of IPQ scores and commercialization rates of patents owned by a Fortune-100 company. While IPQ scores may be predictive of likely value and commercialization rates, care must be exercised not to use IPQ scores incorrectly as a surrogate or substitute for value. No direct correlation has been established between IPQ scores and "fair market value" or patent royalty rates.

2. Percentile Rank - Patents are ranked on a percentile-basis according to IPQ score. The percentile rank represents the proportion of patents in a given population that have IPQ scores less than or equal to the reported score. For instance, if a patent receives an IPQ score of 125 and this is greater than or equal to 90% of other patents in a given population, then the patents' percentile rank would be 90% relative to that population. Patents are ranked according to five different populations or groupings: (i) Overall – all patents; (ii) "Field" – same field; (iii) "Class" – same class; (iv) "Subclass" – same class/subclass; and (v) "Assignee" – same assignee.

3. Quality Rankings - Letter grades are assigned to each patent based on percentile rankings of IPQ scores among patents in the same class. Patents ranked between the 40th and 60th percentiles are assigned a grade of "B" corresponding to a normal or median quality. Patents ranked below and above the 40th and 60th percentiles are graded on a bell-curve with a nominal low grade of "C-" (bottom 5%) and a nominal high grade of "A+" (top 5%).

4. Rating Factors - IPQ rankings or ratings are derived from PTO maintenance fee records using statistical patent survival analysis. The model looks for statistically significant correlations between patent survival (maintenance or abandonment rates) and certain objective attributes or "metrics" revealed by the patent document itself, its prosecution history and/or associated public records.

For example, the figures below illustrate statistical correlations between patent survival rates and the number of independent claims (left) and the number of forward citations (right graph).



The graph on the left shows that patent survival rates generally increase with the number of claims. Patents in the sample population having only one independent claim had an observed 4th year maintenance rate of 81.3%, compared to 92.6% for patents having 12 or more independent claims. The graph on the right shows that patent survival rates generally increase with the number of forward citations a patent receives. Patents in the sample population that received no forward citations within the first four years had an observed 4th year maintenance rate of 79.3%, compared to 93.5% for patents that received 14 or more citations. The indicated correlations are statistically significant to the 99.9% confidence level (< 0.001).

Patents can be comparatively ranked or rated based on these and other objective criteria. The IPQ rating model considers over 50 individual metrics each having a statistically significant correlation to patent survival rates. For convenience of analysis and reporting metrics are generally categorized in different groups corresponding to various "factors" that contribute to the overall IPQ score. A brief description of these factors and some of the more relevant metrics is provided below:

(i) Technology - The relative mortality or maintenance rates of similar patents within the same technology space. The technology space is defined as other patents within the same class/subclass or patents falling within various related clusters of technically similar patents. The technology factor considers the relative differences in mortality rates between, for example, patents relating to "hummingbird feeder controllers" (high mortality) and patents relating to "human factor-8 growth hormones" (low mortality). But, it does not consider or assess the technical merits of the particular underlying invention in either case.

(ii) Prior Art - The scope of prior art considered by the patent examiner. Relevant metrics include the number and type of cited prior art references, the average age of the references and the number of search fields considered by the examiner in conducting the prior art search.

(iii) Disclosure - Thoroughness of the patent disclosure. Relevant metrics include the number of words contained in the patent specification and the number of figures described.

(iv) Claims - Breadth and quality of the claims. Relevant metrics include the number of independent and dependent claims, claim types (e.g. method, apparatus, etc.), number of words per claim, and the presence or absence of specific limiting language such as "means" clauses and the like.

(v) Prosecution - Prosecution history of the patent. Relevant metrics include length of pendency, number and type of documents filed, identity of the prosecuting attorney or law firm, and the identity of the primary and assistant examiners.

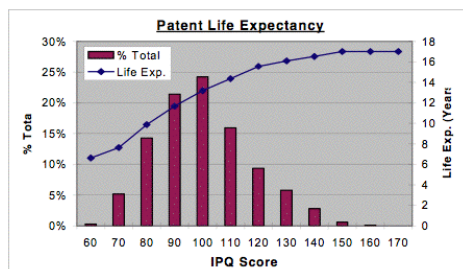
(vi) Ownership - Various factors relating to patent ownership (e.g., metrics private or corporate, small entity or large entity, foreign or domestic, etc.) have been identified as statistically correlated to patent maintenance rates. IPQ scores are adjusted to ignore ownership factors. However, for certain purposes such as investment analysis and business valuations, it may be appropriate or desirable to use a modified score (IPQa) that takes into

(vii) Other - Various metrics not otherwise categorized.

APPENDIX 1:
Application Notes

5. Raw Scores -The Report indicates raw scores and percentile rankings according to each of the identified factors. Raw scores are normalized to a median or expected raw score of 1.0. Thus, a raw score greater than 1.0 generally indicates that the corresponding factor has a positive impact on the overall IPQ score, while a raw score less than 1.0 generally indicates a negative impact on the overall IPQ score.

6. Life Expectancy - Average estimated patent life expectancies are determined using IPQ scores and various actuarial tables and calculations developed by PatentRatings. The graph below illustrates estimated total life expectancies (measured from patent issuance to expiration or abandonment) for a sample population of patents issued in 1996.



The graph shows that patents scoring lower than about 60 on the IPQ scale (about 0.3% of the population) had an average total life expectancy of about 6.7 years from issuance corresponding to an overall average survival rate of 11.5%. Patents scoring higher than about 150 on the IPQ scale (about 0.7% of the population) had an average total life expectancy of about 17.9 years (average full term) corresponding to an overall average survival rate of 100%. The median life expectancy was about 13.7 years corresponding to an overall average survival rate of about 55.9% and an IPQ score of 100.

The Report provides estimates of both total life expectancy (total years from issuance) and the remaining life expectancy (average number of additional years the patent is expected to survive). For specific estimated life expectancies and survival probabilities through the 4th, 8th and 12th year maintenance fee dates, refer to the “Life Expectancy & Survival Statistics Table” on page 1 of the Report. The notations Y0, Y1, Y2, etc., refer to the age of the patent in years from date of issuance. The notations M1, M2 and M3 indicate scheduled maintenance fee payments for the 4th, 8th and 12th years, respectively. All indicated survival probabilities are cumulative. Thus, for example, a 50% expected survival at M3-Y12 indicates there is a 50% expected probability that a patent issued at Y0 will survive beyond Y12 (i.e., the 12th year maintenance fee will be paid). Patents in force after Y12 will run full term and the remaining life expectancies of these patents can be directly calculated from the expiration date listed on the patent.

Frequently Asked Questions

Q - If a patent scores low on the IPQ scale does that mean that it is less valuable. Conversely, if a patent scores high on the IPQ scale does that mean it is more valuable?

A - As with human IQ the IPQ score tells only part of the story. The IPQ score does not directly determine the value of a patent, just as an individual’s IQ does not directly determine his or her financial net worth. However, it does establish a statistical probability or correlation based on the body of available data. Thus, high-scoring patents have a statistically higher probability of generating economic benefit than low-scoring patents.

Q - If a patent is rated low on the IPQ scale does that mean that the prosecuting attorney or firm did a bad job?

A - As with human IQ the IPQ score tells only part of the story. The number of different factors or “metrics” determined to have significant statistical correlation with either high or low patent maintenance rates. While the overall work quality, diligence and experience of the prosecuting attorney or law firm can certainly impact patent quality and IPQ scores, there are many other factors the model considers. Thus, it is equally plausible and even probable in some cases that a low score could result from factors unrelated to or beyond the control of the prosecuting attorney/firm.

Q - How does patent ownership affect IPQ scores?

A - Various factors relating to patent ownership (e.g., private or corporate, small entity or large entity, foreign or domestic, etc.) have been identified as statistically correlated to patent maintenance rates. Generally speaking, patents that are assigned tend to have higher expected maintenance rates than patents that are unassigned or owned by the inventor(s). Patents that are assigned to “large-entity” corporations tend to have higher expected maintenance rates than patents assigned to “small-entity” corporations. IPQ scores are adjusted to ignore these ownership factors so that differences in ownership do not affect IPQ scores. However, for certain purposes such as investment analysis and business valuations, it may be appropriate and desirable to use a modified score (IPQa) that takes into account some or all of these ownership factors. Life expectancy and maintenance probability calculations consider all identified factors, including ownership.

Q - The modified IPQa score is higher than the regular IPQ score. Does this mean the patent actually has a higher probability of producing economic return or is of a higher quality than otherwise indicated by the IPQ score?

A - Possibly. The difference may reflect the fact that certain patent owners (or certain types of patent owners) are better capitalized, have more significant patent resources, collateral technologies, market penetration, etc., that make their patents generally more valuable (more likely to produce economic benefit) than patents owned by other companies or individuals. Certain patent owners (or types of patent owners) might also be statistically more likely to acquire higher quality and/or more commercially valuable patents than other patent owners and these factors are reflected in the modified IPQa score.

Q - Can individual patent IPQ scores be averaged or otherwise combined to produce an average rating for an entire portfolio of patents?

A - It depends. It is generally appropriate to calculate an average IPQ score for a portfolio of patents as a fair characterization of its rated quality and/or for grading purposes relative to other patents and portfolios. For valuation analysis, however, it would not necessarily be accurate to use an average or combined IPQ score to derive an implied average value (expected economic return) for all patents in the portfolio. If you assume that patent values are lognormally distributed (values increase exponentially with percentile rank within a defined population) averaging IPQ ratings across the entire portfolio would tend to underestimate overall value by under-weighting the most highly-ranked patents.

Q - What is the difference between the IPQ score and the patent quality rating or grade?

A - IPQ scores map to a single uniform scale normalized to a median of 100. All patents are scored on the same scale regardless of the field of technology or the particular class/subclass of the invention. Quality ratings, in contrast, are based on relative percentile rankings of IPQ scores among other patents within the same class/subclass. Thus, for example, a patent scoring below average on the IPQ scale may still receive an above-average quality rating or letter grade if its IPQ score is higher than other patents in the same class/subclass.

Q - How long are this Report and the IPQ score good for?

A - Reported patent ratings, scores and rankings change continually over time as new information becomes available and is integrated into the IPQ rating model. Information pertaining to newly-issued patents is updated on a weekly basis. All other information is updated periodically, usually on a quarterly basis. Changes in reported ratings, scores and rankings may also occasionally occur due to modifications, improvements or refinements to the IPQ rating model. Notices of such changes will usually be posted on the PatentRatings web site at www.patentratings.com.

Other Information

For more information about the IPQ® report and PatentRatings® system, model construction and statistical methodology please visit us at www.PatentRatings.com.