

Patent #: **US 6073750**
Title: **Needle transfer device**
Report Date: **3/16/2012**

Total Patent Factor™:
500/1000

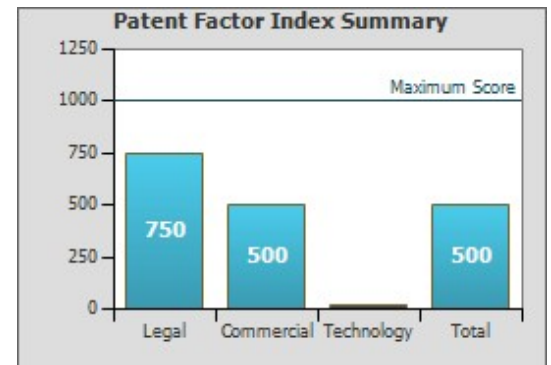
This Patent Factor Index report was generated by [Pantros IP](#) subject to these [Notes & Terms](#).

This **Patent Combined Report** separately analyzes the three critical factors that professional analysts need to determine patent value, to make legal assessments, or to support business-critical decisions relating to this patent. High confidence strategies and real-world valuation occurs when **Legal, Commercial, and Technology Factors** are assessed with the understanding of how each factor interrelates with the others.

More emphasis should be placed on the individual factor indices rather than the Total Patent Factor since a single "score" may obfuscate important components contributing to patent value from the Recipient's unique objectives, perspective, core knowledge, assumptions or understanding of the discrete legal, technology or commercial indicators reviewed in this report.

The Patent Combined Report is the industry's most significant and comprehensive online patent analysis tool, providing a window of understanding into the patent being evaluated based on advanced latent semantic analysis technology and large scale patent analytics modeling (multivariate regression models, econometric, citation and bibliometric analysis).

Each FACTOR may earn a maximum score of 1000, and a minimum score of ZERO. This Summary Page is followed by individual factor analysis, further detailed by accompanying notes and references.



This **Patent Value Report** segment separately analyzes the estimated economic value of an issued US patent, as well as the estimated market size.

The Patent Value Report Terms (PDF) help interpret the data presented in this report, and are considered an integral part of this Patent Value Report.

Additional information related to patent economic value as presented in this report is available in Pantros IP's [Knowledgebase](#).

Patent Value Summary

Patent Value Projected Market Size

Estimated Size of Patent Projected Market: **\$3,425,769.61**

Patent Value Projected Patent Valuation

Predicted Patent Value: **\$415,465.40**

Patent Value Legal Summary

Remaining Life of Patent: **4 year(s), 11 months**

Report Contents

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Patent Bibliography

Patent #: US 6073750

Document Kind: A1

Title: Needle transfer device

Current Applicant: ETHICON, INC., NEW JERSEY

Applicants (Assignees):
ETHICON INC

Named Inventors:
DEMAREST DAVID D
LENIHAN TIMOTHY

Agents:
Scully, Scott, Murphy & Presser ,
Scully, Scott, Murphy & Presser

Filing Date: 2/24/1997

Issue/Pub Date: 6/13/2000

Patent Termination: 2/24/2017

Patent Enforceability Status: Enforceable

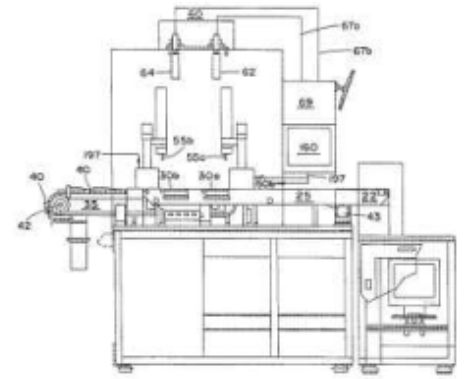
US Classifications / Sub Classes:
198/431 198/803.7 901/009

IPC Classifications / Sub Classes:
B65G/4726 B21G/00100 B25J/00916
A61B/01706 B21G/00108 G06T/00700

Jump forward to: [Citations](#)

Abstract:







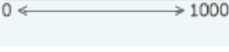
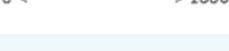
A needle sorting device includes an infeed device which first singulates a bulk supply of surgical needles into single file with an intermittently driven vibratory feed bowl assembly, and then individually separates and deposits the needles on a first conveyor for transmission to a processing station with a linear slide discharge mechanism. The first conveyor is translucent and during transit, one or more cameras obtain an image of the individual deposited needles. The image is digitized and the digital signals are transmitted to a control system computer which evaluates the position and orientation for needles and processes the information to obtain data for communication to one or more robot assemblies having grippers. Utilizing the position and orientation data, the robot assembly grippers removes selected needles from the first conveyor and transfers each needle to an engagement device located upon a second precision conveyor. This second precision conveyor is provided with additional devices to further orient the needle transferred thereto. A moveable hard stop is provided at the end of the precision conveyor to provide precise positioning of the needle to an accuracy of 0.001 inch at needle hand-off. Each oriented and precisely positioned needle is conveyed by the second conveyor to an automatic swaging station where sutures are automatically attached.



Patent Family & Legal Information:

Publication	Title	Filed	App #	Status
AU1014995A	Needle sorting device	1/11/1995	1014995	Enforceable
CA2139995A1	NEEDLE SORTING DEVICE	1/11/1995	2139995	Not Enforceable
Gazette Date 1/11/2000	Code FZDE	Description (remarks) DEAD		
EP0663271A3	Needle sorting device.	1/13/1995	95300200	Not Enforceable
Gazette Date 1/20/1999	Code 18D	Description (remarks) DEEMED TO BE WITHDRAWN EFFECTIVE DATE: 5/13/1998		
11/12/1997	AK	DESIGNATED CONTRACTING STATES:		
7/19/1995	AK	DESIGNATED CONTRACTING STATES:		
JP3688324B2		1/13/1995	2110095	Enforceable
JP8033638A	DEVICE AND METHOD FOR ARRANGEMENT OF SUTURAL NEEDLE LOCATION	1/13/1995	2110095	Enforceable
US2004007445A1	Needle sorting device	8/20/2003	64466503	Enforceable
US5511670A	Needle sorting device	1/13/1994	18160094	Enforceable

Gazette Date	Code	Description (remarks)
9/28/2007	FPAY	FEE PAYMENT
9/24/2003	FPAY	FEE PAYMENT
8/30/1999	FPAY	FEE PAYMENT
1/13/1994	AS02	ASSIGNMENT OF ASSIGNOR'S INTEREST
1/13/1994	AS	ASSIGNMENT ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:DEMAREST, DAVID;BLANCH, JOHN F.;REEL/FRAME:006844/0593;SIGNING DATES FROM 19940105 TO 19940106 ASSIGNED TO: ETHICON, INC., NEW JERSEY
US5727668A	Needle sorting device	9/19/1996 71579096 Enforceable
Gazette Date	Code	Description (remarks)
8/19/2009	FPAY	FEE PAYMENT
8/25/2005	FPAY	FEE PAYMENT
8/10/2001	FPAY	FEE PAYMENT
US6073750A	Needle transfer device	2/24/1997 80403897 Enforceable
Gazette Date	Code	Description (remarks)
9/21/2011	FPAY	FEE PAYMENT
11/26/2007	FPAY	FEE PAYMENT
11/24/2003	FPAY	FEE PAYMENT
5/4/1998	AS	ASSIGNMENT MERGER AND CHANGE OF NAME;ASSIGNOR:ETHICON, INC. (OLD COMPANY);REEL/FRAME:009173/0444 ASSIGNED TO: ETHICON, INC., NEW JERSEY EFFECTIVE DATE: 12/29/1997
8/25/1997	AS	ASSIGNMENT ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:DEMAREST, DAVID D.;LENIHAN, TIMOTHY;REEL/FRAME:008695/0287;SIGNING DATES FROM 19970714 TO 19970715 ASSIGNED TO: ETHICON, INC., NEW JERSEY
US6123185A	Needle sorting device	2/24/1997 80403997 Enforceable
Gazette Date	Code	Description (remarks)
9/26/2011	FPAY	FEE PAYMENT
2/26/2008	FPAY	FEE PAYMENT
3/5/2004	FPAY	FEE PAYMENT
5/4/1998	AS	ASSIGNMENT MERGER AND CHANGE OF NAME;ASSIGNOR:ETHICON, INC. (OLD COMPANY);REEL/FRAME:009173/0444 ASSIGNED TO: ETHICON, INC., NEW JERSEY EFFECTIVE DATE: 12/29/1997
8/25/1997	AS	ASSIGNMENT ASSIGNMENT OF ASSIGNORS INTEREST;ASSIGNORS:DEMAREST, DAVID D.;BLANCH, JOHN F.;LENIHAN, TIMOTHY;AND OTHERS;REEL/FRAME:008695/0390;SIGNING DATES FROM 19970714 TO 19970813 ASSIGNED TO: ETHICON, INC., NEW JERSEY
US6644464B1	Needle sorting device	4/5/2000 54369300 Enforceable
Gazette Date	Code	Description (remarks)
4/14/2011	FPAY	FEE PAYMENT
4/27/2007	FPAY	FEE PAYMENT
US6997305B2	Needle sorting device	8/20/2003 64466503 Enforceable
Gazette Date	Code	Description (remarks)
7/15/2009	FPAY	FEE PAYMENT

Patent Legal Factor (PL/I)											
OVERALL LEGAL FACTOR SCORE											
1. ENFORCEABILITY A US patent has three maintenance fee payment dates between issuance and expiration. Failure to pay maintenance fees, or expiration results in an unenforceable patent. If a patent is in review, the enforceability rating is reduced since there is a chance the patent will be invalidated.											
2. TOTAL RELEVANCY STRENGTH Relevancy ranking of this patent compared to the 100 most relevant US patents returned from a Latent Semantic Analysis search using the full text claims of this patent.											
3. NOVELTY Based on backward patent citations. A higher number of backward citations generally indicates a reduction of invention novelty. This indicator shows the placement in number of backward citations compared to the 100 most relevant patents.											
4. INNOVATIVE SCOPE Patents containing a higher number of backward patent and non-patent citations have been shown to have a narrower scope of claims (more limitations) than related patents with fewer citations.											
5. VALIDITY CONFIDENCE (Un-cited Earlier Filed Art) A lower number of highly relevant but un-cited patents with earlier filing dates, disregarding earlier prior art <i>issue</i> dates, increases the confidence of surviving an invalidity challenge.											
6. VALIDITY CONFIDENCE (Un-cited Concurrent Art) Discovery of fewer highly relevant but un-cited Concurrent art patents (co-pending during prosecution) increase the confidence of surviving an invalidity or infringement challenge.											
7. SUSTAINABILITY IN OPPOSITION The number of inventors on a patent significantly correlates to opposition survivability; the fewer inventors, the more likely a patent is to survive opposition.											
8. LITIGATION AVOIDANCE When compared to closely related patents, if this patent has fewer forward citations within 3 years of issuance, it will substantially increase likelihood of avoiding future litigation.											
9. TABLE 1.0 - KEY LEGAL INDEX METRICS <table border="0"> <tr> <td>Patent Expiration Date:</td> <td>2/24/2017</td> </tr> <tr> <td>Number of Backward Patent and Non-patent Citations:</td> <td>16</td> </tr> <tr> <td>Number of Relevant Un-cited Prior Art Patents:</td> <td>2</td> </tr> <tr> <td>Number of Relevant Un-cited Concurrent Art Patents:</td> <td>1</td> </tr> <tr> <td>Number of Forward Citations (within 3 yrs post issuance):</td> <td>0</td> </tr> </table>	Patent Expiration Date:	2/24/2017	Number of Backward Patent and Non-patent Citations:	16	Number of Relevant Un-cited Prior Art Patents:	2	Number of Relevant Un-cited Concurrent Art Patents:	1	Number of Forward Citations (within 3 yrs post issuance):	0	
Patent Expiration Date:	2/24/2017										
Number of Backward Patent and Non-patent Citations:	16										
Number of Relevant Un-cited Prior Art Patents:	2										
Number of Relevant Un-cited Concurrent Art Patents:	1										
Number of Forward Citations (within 3 yrs post issuance):	0										
10. [About This Report Definitions Related Tables & Charts References]											

Notes: Patent Legal Factor (PL/f)

- Enforceability:** The actual patent term may be different from the patent term shown if there were any patent term adjustments made under 35 USC § 1.705.
- Relevancy:** Higher ranked patents are more relevant to the claims of this patent, based on Pantros IP's Latent Semantic Analysis search results.
- Novelty:** More prior art citations limit the scope of the inventor's claim for novelty since the patent builds previous innovations or preexisting knowledge. Statistically, non-patent citations restrict novelty more than patent citations.
- Innovative Scope:** Patents containing a higher number of backward citations have narrower innovative scope. This is offset on patents that have a correspondingly higher number of claims. This report does not adjust scope based on the number of claims.
- Validity:** (Table A) Evidence in various patent litigation studies suggests that un-cited prior art is the most common basis for invalidity or revocation decisions by the court of patent office.
- Concurrent Art:** (Table A) Concurrent art citations represent a high risk to a patent since there was no way for the Applicant, or possibly the patent examiner, to know the disclosure or claims contained in the Concurrent Art citations.
- Opposition:** only the number of inventors is significantly correlated with the maintenance of the patent but exerts a negative effect on the likelihood of the patent surviving opposition.
- Opposition/Litigation Avoidance:** Compared to relevant patents, one additional forward citation per claim raises the probability of an infringement lawsuit or opposition by 22 percent. A one standard deviation increase in forward citations per claim raises the probability of litigation or opposition by 35 percent. A low score suggests that the higher probability of litigation or opposition (when compared to other patents listed in

the top 100) will result in either loss of patent rights if a competitor is successful in invalidating or opposing the patent, or in significant investment in litigation or opposition defense by the owner seeking patent enforcement.

Patent Prior Art and Possible Uncited Prior Art for Patent No: US 6073750

TABLE A			
Backward Citations	Forward Citations	UN-cited Prior Art*	UN-cited Concurrent Art*
EP 581699		US 5511670	US 5727668
JP 63299834		US 5568593	
US 4187051			
US 4437114			
US 4651879			
US 4674869			
US 4744035			
US 4835450			
US 5065237			
US 5131533			
US 5150307			
US 5195234			
US 5253765			
US 5370216			
US 5473810			
US 5542526			

*** NOTE:** Patents listed in the "un-cited" prior art columns were identified as patents meeting certain statistical parameters. The listing of any patent does not imply that the patent is, in fact, prior art, but merely identifies patents with a high likelihood of meeting prior art requirements. Thorough analysis by a competent patent legal professional is required to determine whether any listed patents are prior art to the patent being analyzed in this report.

Patent Commercial Factor (PC/f)	
OVERALL COMMERCIAL FACTOR SCORE	
11. FORWARD CITATION VALUE CONTRIBUTION A larger number of forward citations when compared to the 100 most closely related patents disproportionately increases the value of this patent.	
12. BACKWARD CITATION VALUE CONTRIBUTION The larger number of backward patent citations tend to suggest a larger market size. Backward citations are a less reliable contributor to patent value than Forward Cites.	
13. ENFORCEMENT LICENSING POTENTIAL Fewer applicants dominating a particular field present a more favorable environment to pursue more costly opportunities to generate the highest revenue per licensee.	
14. PARTNERING LICENSING POTENTIAL (CROSS-CLASSIFICATION) Licensing potential into non-obvious or unrelated patent classes is based on invention activity in closely-related markets protected by different US classifications.	
15. CROWDEDNESS (POTENTIAL LICENSEES) Crowdedness (more assignees practicing highly related patents that are within the top 100 most relevant) suggests more activity in the market, and more licensing opportunities.	
16. DIVESTITURE LICENSING PREMIUM (PATENT GROUP) Broader market protection corresponds to the increased number of patents, and value of each patent this applicant owns (<i>Patent Group</i>) within the 100 most relevant.	
17. PATENT GROUP COMPETITIVE POSITION The competitive position of this applicant's Patent Group relative to the size of other applicants' Patent Groups identified within the 100 most relevant patents.	
18. IN-LICENSE OPPORTUNITY For portfolio expansion through in-licensing: this index rates the relative number of <i>high interest, unassigned</i> enforceable patents within the 100 most relevant.	
19. TABLE 2.0 - KEY COMMERCIAL INDEX METRICS	
Number of Different Classifications Within 100 Most Relevant Patents:	35
Potential Licensees (Applicants) Within 100 Most Relevant Patents:	61
Number of Unassigned Patents Within Top 100 (Informational):	6
Number of Patents Owned by This Applicant Within Top 100 (Patent Group):	19
20. [About This Report Definitions Related Tables & Charts References]	

Notes: Patent Commercial Factor (PC/f)

- 11. Forward Citation Value:** Compared to relevant patents within this semantic technology area, each extra citation per patent boosts market value by 3%. Patents with two to three times the median number of forward citations carry a 35% value premium, and those with 20 citations and more command a 54% market value premium. The factor bar indicates how this patent compares to the 100 most relevant in this technology area. (Patent Applications rarely have forward citations.)
- 13. Enforcement Licensing:** A higher enforcement (stick) licensing potential is shown when fewer applicants dominate this field, assuming that higher costs of aggressive litigation correspond to higher long-term revenue potential. Interpret this factor bar IN THE INVERSE if the objective is to broadly assert this patent against many smaller licensees who would see licensing as an annoying but affordable alternative to litigation.
- 14. Partnering Licensing:** (TABLE B) Emerging technologies, or parallel inventions that exist outside of the Classification of this patent can present unanticipated licensing opportunities into non-obvious patent classifications. The Patent Factor identifies non-obvious patent classifications of closely related patents (based on semantic analysis of the claims of this patent).
- 15. Crowdedness:** (TABLE C) A listing of potential licensees (applicants owning closely related patents). A larger number of companies with more than one patent indicates broader industry investment in R&D, positively correlating to a more valuable commercial market.
- 16. Divestiture Licensing:** A negative factor rating (red) means that this applicant only owns one patent listed in the most relevant 100, although ownership of more patents that may not appear in the top 100 may also increase the discrete value of this patent, especially if this patent is included in a licensing bundle.
- 17. Patent Competitive Group Position:** Based on the premise that the list of the 100 most relevant patents defines the corpus of a technology domain, ownership of more than one patent on the list would indicate broader market presence. If the owner of this patent owns a larger percentage of the top 100 patents than other listed patent owners, it receives a higher score for its competitive position.
- 18. In-licensing Opportunity:** This score applies only to US Patents, which can be filed and owned by an individual (i.e., "unassigned"). European

patents and applications always have an assignee.

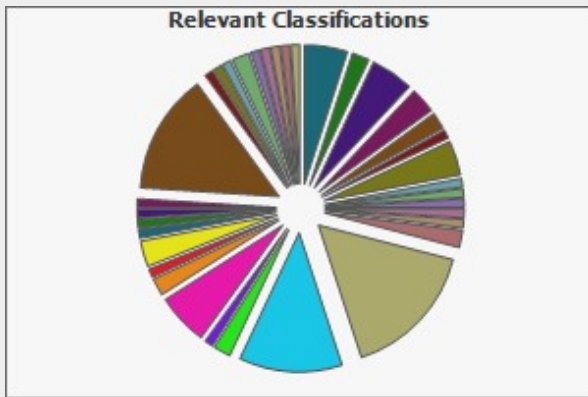
PC/f: Licensing Analysis

- Semantic search results may list related patents across seemingly unrelated Classifications. Patents categorized in such cross-classifications may have been misclassified, may disclose multiple inventions in different classes, or may reflect a diffusion of this technology into other technology areas.

- The readers subject matter expertise is important in determining whether prolific applicants are inclined to respond negatively or positively to a "carrot" licensing offer. On the other hand, companies recently entering this technology area with products reading on just a few patents may be more amenable to licensing your technology.

TABLE B

Licensing Potential: Relevant Classifications



Non-obvious Classifications:

The top 100 most relevant patents returned from the semantic search of the claims of patent US 6073750 may indicate closely related patents in different Classifications. These non-obvious classifications often represent licensing opportunities not previously considered.

Classification # of Patents

029	5
038	2
053	5
072	3
073	2
099	1
112	4
118	1
119	1
140	1
141	1
144	1
177	2
198	16
209	12
211	2
242	1
270	6
271	2
294	1
295	3
324	1
356	1
358	1
395	1
414	14
422	1
427	1
451	1
452	2
470	1
493	1
700	1
714	1
738	1

TABLE C

Field of Potential Licensees

Identifying Licensees: Table C

Applicant Name	# of Patents
AM INT	1
AUTOMATION PARTNERSHIP CAMBRID	1
AXIS S P A	1
BELOIT TECHNOLOGIES INC	1
BETA S/A	1
BROWN & WILLIAMSON TOBACCO	1
CHIU MANUEL	1
CLAYTON DURAND MFG CO INC	1
CYBEX TECH CORP	1
DELL USA LP	1
DESIGN TECHNOLOGY CORP	1
DETEXOMAT MACHINERY LTD	1
EL CU SPA	1
EMBEX INC	1
FLEETWOOD SYST INC	2
FLEXICELL INC	1
GBR SYSTEMS CORP	1
GRUNER & JAHR	1
KEETON JOHN H	1
KOLBUS GMBH & CO KG	2
KOMATSU MFG CO LTD	1
KOMAX HOLDING AG	1
KRONSEDER HERMANN	1
KUTTER T W INC	1
LANG JOHN	1
LEIFELD & LEMKE MASCHF	1
LICENTIA GMBH	1
LINGL CORP	6
MARTI JAIME S	1
MATSUSHITA ELECTRIC IND CO LTD	1
MEYN MASCHF	2
MOTOROLA INC	1
OSSID CORP	1
PEARNE AND LACY MACHINE CO INC	1
PEYER AG SIEGFRIED	1
PLAN SELL OY	1
QUEENSLAND SCIENCE & TECH LTD	1
RAPINDEX INC	1
ROSEBAY TERRACE PTY LTD	1
RUSSELL CORP	1
SAAB SCANIA AB	1
SEYMOUR INC	1
SHENKAR COLLEGE TEXTILE TECH	1
SHIELDS WALTER	1
SMITHKLINE BEECHAM BIOLOG	2
SOLIS SRL	1
SPEED SORT INC	2
STRAUSS LEVI & CO	1
SWITEK JR ROBERT E	1
SYSTEMES FEUILTAULT SOLUTIONS	1
TAPEMATIC USA	1
TECHNISTAR CORP	1
UNION SPECIAL CORP	2
UNITED STATES SURGICAL CORP	4
VOLVO AB	1

Companies (applicants) named on the 100 patents most relevant to patent US 6073750 have an interest in your product or technology area. Applicants with multiple patents listed within the top 100 have invested heavily in this area, and consider this technology segment to be of high commercial interest.

Prolific applicants within this technology / product area may prefer litigation to licensing, while smaller applicants may welcome the opportunity to in-license to fortify their smaller portfolio.

WEST CO	1
WESTERN LITHO PLATE & SUPPLY	1
WILL E C H GMBH & CO	1
WOODMA OY	1
WORLD COLOR PRESS	1
ZINSER TEXTILMASCHINEN GMBH	1

TABLE D

In-licensing / Opportunistic Licensing

Unassigned Patents

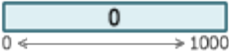
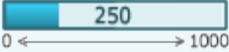
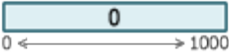
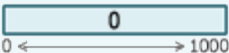
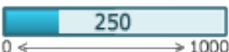
Patents

US 20030140283 US 20040173387
 US 20030209403 US 5419439
 US 20040094389 US 5898488

The most **relevant unassigned patents** represent an opportunity for a company practicing in this technology area to expand its portfolio by in-licensing.

Patents are recorded without an assignee (applicant) name for various reasons, including a decision by the applicant to not record the assignment, or because there was no separate legal entity (other than the inventor) to hold the rights for this patent.

(TABLE D) In-licensing potential is NOT incorporated into the PC/f scoring total which only focuses on out-licensing. Higher scores for this index indicate that there may be a large number of the top 100 patents that are unassigned. This indicates ownership by individual inventors. Building a portfolio of high quality patents by licensing or acquiring patents from individual inventors is often less expensive and more efficient than licensing from large entities. (A large percentage of "unassigned" published applications listed in the top 100 may actually be assigned, but do not reflect a later filed assignment.)

Patent Technology Factor (PT/f)	
OVERALL TECHNOLOGY FACTOR SCORE	
21. TECHNOLOGY ADVANCEMENT This patent factor bar indicates whether this patent is a small incremental step, or a significant leap over the technology disclosed in the 100 most closely related patents.	
22. TECHNICAL SOPHISTICATION A higher number of forward citations to this patent, when compared to the 100 most relevant patents, indicates a higher level of technical sophistication.	
23. EMERGING TECHNOLOGIES The higher the number of primary classifications within this patent's forward citations that differ from the present invention, the more diffused the core technology is.	
24. TECHNOLOGY COGENCY More inventors listed on the present patent, when compared to the 100 most relevant patents, argue in favor of a stronger, more substantial and persistent technology (cogency).	
25. TABLE 3.0 - KEY TECHNOLOGY FACTOR METRICS Number of Different Classifications of Forward Cited Patents: 0 Number of Inventors Listed in This Patent: 2	
26. [About This Report Definitions Related Tables & Charts References]	

Notes: Patent Technical Factor (PT/f)

- 21. **Technology Advancement:** An increased number of backward citations, when compared to closely related patents, generally indicates that the current patent is more closely linked to previous innovations or pre-existing knowledge upon which the inventor builds (smaller technology advancement). An exception occurs when a correspondingly high number of claims support the larger number of backward citations. This report does not adjust for claims count.
- 22. **Technical Sophistication:** Technical sophistication is evidenced by forward citations. The number of forward citations a patent receives correlates positively with its technological importance, as measured by expert opinions, social value, and industry awards, as well as to an increased economic value of the invention.
- 23. **Emerging Technologies:** (TABLE E.) A higher emerging technologies score occurs when there is a high number of classifications which differ from the primary classification of the present patent. However, in some cases, a number of different classifications of the forward citations may still be within the core technology area. Be sure to review the classification diversity in the table below.
- 24. **Technology Cogency:** When more inventors contribute to an invention, it tends to be "more complete". If this patent has more inventors listed when compared to the mean number of inventors on closely related patents, it will generally be a stronger, more important technology. This may not be all positive, since the larger number of inventors also reduces the likelihood that the patent will survive opposition (#7).

PT/f: Emerging Technologies

- A high rate of adoption of the core technology protected by this patent by unrelated industry segments reinforces the importance of the this technology.
- The forward citations of the Patent of Interest that have main classifications outside of its own main classification demonstrate the technology advancement, direction and commercial value.
- The higher the number of main classes found in the patent's forward citations, the further the patent's foundational technology has diffused into other technological areas. A high number of classes represents a high value in the emerging technologies score of the patent and increases its value.

TABLE E	
Emerging Technologies	Diffusion of Classifications
	The forward citations of this patent are categorized in the following primary classifications. Classifications that differ from the present patent indicate a diffusion of this patent's technology into other technology areas. Classification # of Patents

PT/f: Technology Adoption / Diffusion (S-Curve)

S-curves represent the generational improvements in technology within this area over time, and at what point a particular technology enters the curve. The curves are used to visualize (a) the probable useful life of a patent (based on the number of generations of improvement since the issuance of this patent), and (b) the adoption of this technology by other industry areas, or the diffusion of technology to spawn related innovation.

The value of this patent is tied positively to a number of S-curve factors: Higher value technologies appear closer to the front of a new S-curve, and the steeper, longer curves indicate a larger market. A dispositive factor is the appearance of many generations of technology improvement (more discrete S-curves) since this patent appeared; this may indicate a more rapid obsolescence (shorter useful life) of that patent's technology.


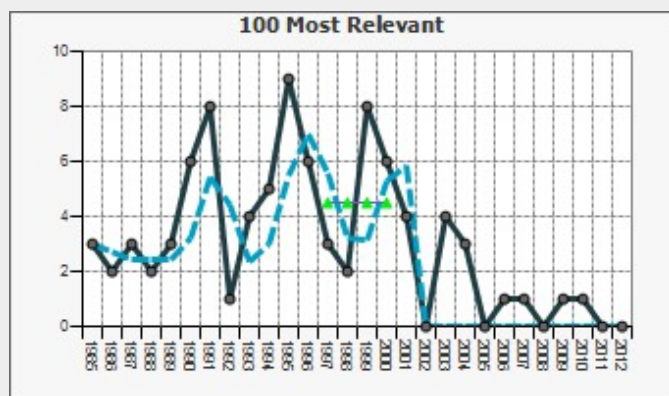
- S-Curve charts below show the number of related patents (gold line) occurring within each year (X Axis).
- The green triangles arrows  show the issue and filing year of patent US 5340197 in relation to all other patents in the series.
- The dashed line "S-Curve" is the geometric mean average of patent activity occurring during the series years.
- A decline in the number of patents in the most recent years may indicate either:
 - a. an actual decline in patent activity within this technology area,
 - b. a delay in public notification (not yet issued or published), or
 - c. the assignment of this technology to a new patent classification (i.e., reclassification) not tracked by this report.

TABLE F

100 Patents Most Relevant to Patent US 6073750

About S-Curve



This S-Curve plots the 100 patents most closely related to patent US 6073750 based on the Semantic search of the claims of this patent, **regardless of patent classification**.

The most relevant patents may have been issued in patent classifications *different from* the classification of this patent, indicating the possible diffusion of this technology across various product or industry sectors.

The date range (X axis) is from the earliest to latest issue date of the 100 most relevant patents.

Any year not shown means that none of the 100 most relevant patents were issued during that year.

TABLE G

25 Year Trend, Year Issued, Main Classification 198

About S-Curve



Seminal patents **within a patent classification** typically occur at the steepest transition between the "long flat tail" and the rapid rise in the curve.

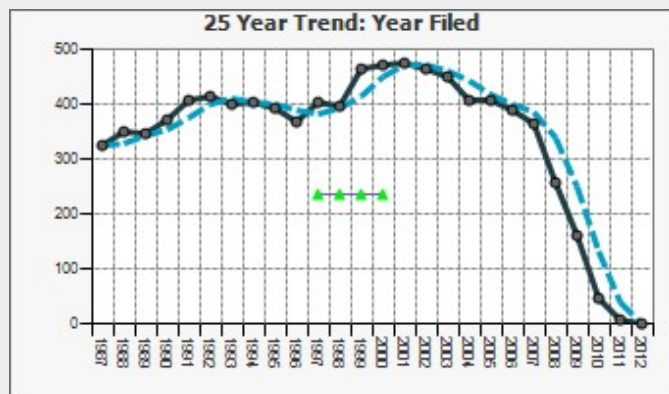
If patent US 6073750 is closer to the Front of an S-Curve, it is considered to be a more important technology upon which rapid improvement or subsequent diffusion is based.

A sequence of individual S-Curves indicates a succession of noticeable improvements in this technology area - know as "technology generations". The technological importance and economic value of this patent may diminish with each subsequent generation since it issued, regardless of where it resides on the S-Curve within its own generation.

TABLE H

25 Year Trend, Year Filed, Patent Main Classification 198

About S-Curve



Beginning in 2001, patent applications (dotted line) are published 18 months after initial filing whether they have issued or not. They serve as an "early predictor" of the issued patent S-Curve above.

A rapid rise in the **patent application activity** may be an **early indicator** that a vigorous period of technology diffusion or adoption may be imminent.

Do not simply assume that a rapid decline in the most recent 1-1/2 years means a tapering off of activity within this classification. Because of the 18 month publication rule, many pending patents may not be reflected on this chart. Verify new patent application activity every few months.

Latent Semantic Search Results List				
27. Following is the list of the 100 most relevant patents used in generating this PF/i Report. (current Patent in blue)				
Rank	Document	Applicant	Filing/Issue Dates	Patent Title
100%	US 5511670	ETHICON INC	1/13/1994 - 4/30/1996	Needle sorting device;
98.67%	US 5727668	ETHICON INC	9/19/1996 - 3/17/1998	Needle sorting device;
98.51%	US 5568593	ETHICON INC	1/13/1994 - 10/22/1996	Robotic control system for a needle sorting and feeding apparatus;
94.78%	US 6123185	ETHICON INC	2/24/1997 - 9/26/2000	Needle sorting device;
94.43%	US 6073750	ETHICON INC	2/24/1997 - 6/13/2000	Needle transfer device;
89.70%	US 6644464	ETHICON INC	4/5/2000 - 11/11/2003	Needle sorting device;
89.68%	US 5898488	NOT ASSIGNED	1/21/1997 - 4/27/1999	Method and apparatus for candling eggs and filling trays with fertile eggs;
89.20%	US 5915751	ETHICON INC	4/30/1997 - 6/29/1999	Off-load dial assembly for needles and sutures;
88.55%	US 5873212	ETHICON INC	4/30/1997 - 2/23/1999	Stand alone swage dial drive assembly;
88.06%	US 6997305	ETHICON INC	8/20/2003 - 2/14/2006	Needle sorting device;
87.90%	US 5911449	ETHICON INC	4/30/1997 - 6/15/1999	Semi-automated needle feed method and apparatus;
87.81%	US 5438746	ETHICON INC	1/13/1994 - 8/8/1995	Needle threading and swaging system;
84.87%	US 6199682	ROSEBAY TERRACE PTY LTD	5/15/1998 - 3/13/2001	Conveyor loading apparatus;
84.27%	US 6012216	ETHICON INC	4/30/1997 - 1/11/2000	Stand alone swage apparatus;
84.19%	US 5575614	WOODMA OY	10/6/1995 - 11/19/1996	Method and apparatus for separating bundles of sawn timber;
83.26%	US 5628409	BELOIT TECHNOLOGIES INC	6/20/1996 - 5/13/1997	Thermal imaging refuse separator;
82.46%	US 4029198	LINGL CORP	7/5/1973 - 6/14/1977	Method and apparatus for forming groups of bricks;
82.31%	US 5370713	QUEENSLAND SCIENCE & TECH LTD	7/1/1992 - 12/6/1994	Automatic plant dividing system;
82.18%	US 5305892	KRONSEDER HERMANN	4/13/1993 - 4/26/1994	Process and device for the sorting of bottles;
81.82%	US 5450940	KOLBUS GMBH & CO KG	5/3/1994 - 9/19/1995	Delivery system for book-sewing machine;
81.76%	US 4070985	LINGL CORP	2/2/1976 - 1/31/1978	Automatic production apparatus for manufacturing of split tile;
81.49%	US 4144977	LINGL CORP	6/23/1978 - 3/20/1979	Selective edge or flat setting of brick;
81.37%	US 5937504	ETHICON INC	4/30/1997 - 8/17/1999	Stand alone swage dial assembly;
81.31%	US 4157408	LINGL CORP	6/13/1977 - 6/5/1979	Production of split tile;
81.06%	US 20100331159	CHIU MANUEL	6/30/2009 - 12/30/2010	AUTOMATIC BAG HANDLING SYSTEM AND METHOD FOR PRECISELY SECURING A PLASTIC HANDLE TO A PLASTIC BAG;
80.77%	US 5277320	SEYMOUR INC	1/21/1992 - 1/11/1994	Shell egg culling system;
80.18%	US 4651879	CLAYTON DURAND MFG CO INC	1/31/1986 - 3/24/1987	Automatic bottle sorting system;
80.06%	US 5388373	UNITED STATES SURGICAL CORP	10/9/1992 - 2/14/1995	Apparatus for applying a cutting edge to a needle;
80.03%	US 5507085	CYBEX TECH CORP	5/13/1993 - 4/16/1996	Method and apparatus for automatically placing lids on component packages;
80.01%	US 5193690	WESTERN LITHO PLATE & SUPPLY	6/6/1991 - 3/16/1993	Method of and apparatus for automatically inspecting an exposed and bent lithographic plate;
79.95%	US 4681063	EMBREX INC	7/2/1986 - 7/21/1987	High speed automated injection system for avian embryos;
79.95%	US 20040094389	NOT ASSIGNED	11/19/2002 - 5/20/2004	Conveyor having carriers with movable jaws;
79.94%	US 6267256	SMITHKLINE BEECHAM BIOLOG	11/9/1999 - 7/31/2001	Storage devices;
79.90%	US 4907699	SPEED SORT INC	3/3/1989 - 3/13/1990	Method and apparatus for sorting randomly positioned garments minimizing setting conveyor movement;
79.84%	US 4444384	KEETON JOHN H	7/16/1981 - 4/24/1984	Cloth pickup and folding head;
79.81%	US 4587913	UNION SPECIAL CORP	4/8/1985 - 5/13/1986	Automatic sewing apparatus;
79.68%	US 4610359	LICENTIA GMBH	2/22/1984 - 9/9/1986	Method for recognizing and sorting articles;
79.62%	US 5918284	ETHICON INC	2/18/1998 - 6/29/1999	Pull test apparatus for permanently attached sutures;

79.60%	US 4531721	UNION SPECIAL CORP	10/26/1983 - 7/30/1985	Automatic transfer apparatus;
79.59%	US 5487308	ETHICON INC	1/13/1994 - 1/30/1996	Needle and suture automatic pull-test system;
79.51%	US 5035134	RAPINDEX INC	11/6/1989 - 7/30/1991	Indexing conveyor for a transfer die system;
79.38%	US 4155467	LINGL CORP	10/31/1977 - 5/22/1979	Grouping and stacking systems for forming tied stacks of block-like articles;
79.36%	US 4991719	SPEED SORT INC	12/12/1989 - 2/12/1991	Method and apparatus for sorting randomly positioned items minimizing sorting conveyor movement;
79.24%	US 5039276	LEIFELD & LEMKE MASCHF	6/22/1989 - 8/13/1991	Methods and apparatus for forming groups of objects;
79.20%	US 6032343	ETHICON INC	2/6/1998 - 3/7/2000	Automated swage wind and packaging machine;
79.12%	US 5370574	MEYN MASCHF	9/21/1992 - 12/6/1994	Method and apparatus for suspending poultry with its legs from a suspension conveyor;
79.04%	US 6263558	ETHICON INC	4/28/1999 - 7/24/2001	Method and apparatus for forming double-armed sutures;
79.03%	US 6012595	SMITHKLINE BEECHAM BIOLOG	8/2/1995 - 1/11/2000	Storage devices;
79.00%	US 4273489	LINGL CORP	12/26/1978 - 6/16/1981	Process and apparatus for forming of set layers from brick blanks;
78.95%	US 6008636	MOTOROLA INC	9/30/1997 - 12/28/1999	Test system with robot arm for delivering a device under test;
78.87%	US 4427329	PEARNE AND LACY MACHINE CO INC	8/31/1981 - 1/24/1984	Monorail jig box loader;
78.85%	US 5568780	DESIGN TECHNOLOGY CORP	1/19/1994 - 10/29/1996	Combining conveyor system with combining fixture;
78.62%	US 5716190	KOLBUS GMBH & CO KG	1/11/1996 - 2/10/1998	Transport process and apparatus for use in bookbinding;
78.43%	US 5457978	UNITED STATES SURGICAL CORP	10/8/1993 - 10/17/1995	Cartridge fed apparatus for forming curved rectangular bodied needles;
78.39%	US 4846414	ZINSER TEXTILMASCHINEN GMBH	10/28/1987 - 7/11/1989	Method and apparatus for automatic orderly removal and collection of fully-spun cops from textile ring spinning machines;
78.33%	US 4756261	SHENKAR COLLEGE TEXTILE TECH	5/6/1985 - 7/12/1988	Automatic sewing system and method;
78.28%	US 20040173387	NOT ASSIGNED	9/29/2003 - 9/9/2004	Gripper devices;
78.26%	US 5366096	BROWN & WILLIAMSON TOBACCO	11/17/1993 - 11/22/1994	Apparatus for and method of automatically detecting and eliminating cigarettes with visual defects during cigarette manufacture;
78.26%	US 5033929	MARTI JAIME S	12/1/1989 - 7/23/1991	Automatic apparatus for feeding a bottling line;
78.25%	US 5419441	UNITED STATES SURGICAL CORP	10/8/1993 - 5/30/1995	Needle blank sorting apparatus;
78.23%	US 4098054	EL CU SPA	12/30/1976 - 7/4/1978	Device for forwarding sacks or like containers;
78.16%	US 4231460	PLAN SELL OY	10/18/1978 - 11/4/1980	System for transferring wane-edged boards;
78.15%	US 4954045	SOLIS SRL	10/17/1988 - 9/4/1990	Apparatus and method for transferring articles from a sewing machine;
78.00%	US 5477663	WEST CO	2/17/1993 - 12/26/1995	Robotic tray loader system, method and apparatus;
77.90%	US 7185411	ETHICON INC	1/30/2004 - 3/6/2007	Method and apparatus for forming fine gauge and monofilament single and double-armed sutures;
77.89%	US 4918907	KUTTER T W INC	1/20/1988 - 4/24/1990	Forming and filling flexible plastic packaging;
77.81%	US RE31453	BETA S/A	9/25/1979 - 12/6/1983	Laundry feeding apparatus;
77.76%	US 5067532	LANG JOHN	2/20/1990 - 11/26/1991	Apparatus for filling self-sealing tubes;
77.71%	US 4953841	WORLD COLOR PRESS	10/7/1988 - 9/4/1990	Machine and process for separating signatures;
77.60%	US 4293063	SHIELDS WALTER	6/22/1979 - 10/6/1981	Apparatus for inverting and transporting articles;
77.46%	US 5168801	SWITEK JR ROBERT E	8/31/1990 - 12/8/1992	Apparatus for slicing broccoli and the like into spears;
77.38%	US 5394726	UNITED STATES SURGICAL CORP	10/8/1993 - 3/7/1995	Apparatus and method for positioning and pressing curved surgical needles;
77.33%	US 5599160	TAPEMATIC USA	11/22/1994 - 2/4/1997	Apparatus and method for putting cassettes into trays;
77.19%	US 5186303	MATSUSHITA ELECTRIC IND CO LTD	11/22/1991 - 2/16/1993	Positional deviation correcting method for subject conveyed on production line;
77.18%	US 4536118	KOMATSU MFG CO LTD	5/13/1983 - 8/20/1985	Apparatus for palletizing pressings;

77.14%	US 4871161	STRAUSS LEVI & CO	10/3/1986 - 10/3/1989	Separating and feeding garment parts;
77.12%	US 5419439	NOT ASSIGNED	10/21/1992 - 5/30/1995	Apparatus and method for automatic multiple level sortation of laundry;
77.06%	US 4765791	WILL E C H GMBH & CO	10/20/1986 - 8/23/1988	Apparatus for expelling air from stacks of paper sheets and the like;
77.03%	US 20030234157	FLEXICELL INC	6/21/2002 - 12/25/2003	Robotic loading cell for molded utensils;
77.02%	US 4125253	GRUNER & JAHR	10/18/1976 - 11/14/1978	Method of providing a stack of predetermined length and apparatus for performing said method;
77.02%	US 6314337	DELL USA LP	8/27/1998 - 11/6/2001	Automated consolidation station;
77.01%	US 20030140283	NOT ASSIGNED	12/27/2002 - 7/24/2003	Apparatus connected to network, and address determination program and method;
76.95%	US 5040056	TECHNISTAR CORP	1/29/1990 - 8/13/1991	Automated system for locating and transferring objects on a conveyor belt;
76.86%	US 5007624	AM INT	5/25/1989 - 4/16/1991	Sheet material handling apparatus and method;
76.81%	US 5269721	MEYN MASCHF	8/28/1992 - 12/14/1993	Method and apparatus for processing poultry;
76.80%	US RE31945	AXIS S P A	11/19/1982 - 7/16/1985	Conveyor apparatus;
76.78%	US 4979870	FLEETWOOD SYST INC	12/5/1989 - 12/25/1990	Automatic tray loading, unloading and storage system;
76.77%	US RE34839	OSSID CORP	3/8/1993 - 1/31/1995	Weighing and labeling apparatus and method;
76.76%	US 20040258566	AUTOMATION PARTNERSHIP CAMBRID	5/12/2004 - 12/23/2004	Transfer apparatus;
76.64%	US 20030209403	NOT ASSIGNED	5/13/2002 - 11/13/2003	Method and process for loading and unloading parts;
76.57%	US 3970128	SAAB SCANIA AB	4/16/1975 - 7/20/1976	Orientation of cant for translatory feed through edging cutters;
76.51%	US 5244196	GBR SYSTEMS CORP	2/19/1992 - 9/14/1993	Pivotable transfer conveyor;
76.51%	US 5987848	ETHICON INC	2/6/1998 - 11/23/1999	Needle transfer arrangement in a machine for the automated packaging of needles and attached sutures;
76.40%	US 5607278	FLEETWOOD SYST INC	2/9/1995 - 3/4/1997	Automatic tray loading, unloading and storage system;
76.39%	US 4976344	VOLVO AB	6/30/1987 - 12/11/1990	Method for transferring articles;
76.38%	US 4827781	PEYER AG SIEGFRIED	5/18/1987 - 5/9/1989	Method and apparatus for the end alignment of fibers for fiber length measurement;
76.38%	US 5014634	DETEXOMAT MACHINERY LTD	10/12/1989 - 5/14/1991	Hosiery toe closing method and apparatus;
76.32%	US 6135164	KOMAX HOLDING AG	9/15/1998 - 10/24/2000	Apparatus and method for preparing wires in a harness making machine;
76.31%	US 4633604	RUSSELL CORP	12/2/1985 - 1/6/1987	Automatic garment portion loader;
76.31%	US 7621516	SYSTEMES FEUILTAULT SOLUTIONS	3/18/2005 - 11/24/2009	Method and apparatus for feeding flat printed products;