The 2017 brokered patent market – the fightback begins

Whisper it softly but the signs first glimpsed in 2016 are becoming stronger – the brokered patent market in the United States may just be in the first stages of a recovery

By Kent Richardson, Erik Oliver and Michael Costa

"This market keeps on getting worse," said the patent broker in a meeting we had in June of this year. "The case law keeps on coming out against patent owners, the prices keep dropping. This job keeps getting harder."

I replied: "Our data says that you did pretty well last year." "Right," the broker conceded. "Last year was our best year ever…" And that is where this market is at. Years of negative results and falling patent prices have shrouded the community in a miasma of mild despair, akin to that suffered by survivors of a collective trauma. However, the data shows a different picture. The overall market is up, with more sales and more participants than ever before. While average asking prices have dropped by $10,000, this number does not determine the overall market. Our data says that things are looking up.

This is our sixth year reporting on the secondary patent market. Although change has been a constant, this time we are seeing fewer big transformations (and some of those are positive). When digging into the details, the impact of these developments becomes more pronounced. However, we will be covering the broader market factors, including that:

- sales increased to $296 million from $165 million in our last report – asking prices are down 8%, but this is a relatively small drop compared to recent years;
- software sales took off, beating the overall market sales rate by 60%;
- old deals are selling – we saw additional sales from 2012 and 2013;
- litigation threats continue to rise; and
- more reasonable price expectations are improving the market's function and transparency.

In 2012 LinkedIn knew it had a problem. Company growth had far outstretched its patent portfolio and the social media giant faced growing patent risk. What to do? A relatively innovative solution presented itself: buy patents. The question was how to do this at scale for such a high-growth company? Although we had sourced patents for other clients, LinkedIn's demand was far greater than anything we had previously experienced. We reached out to our network and sourced every deal we could – LinkedIn wanted to change its risk profile quickly. (For a detailed examination of LinkedIn's buying programme, see "How and why LinkedIn learned to love patents", *IAM* issue 82). It became clear that the programme's efficiency was directly tied to how well we tracked individual packages, where we sourced those packages and ultimately what happened to them. If you receive five packages every business day, you need to know what is in each package, who delivered it, what conditions were associated with the sale and, ultimately, whether it sold. This is how we started tracking the entire market. Our desire for efficiency prompted us to look for optimisations. This meant becoming more efficient at tracking incoming package data and finding new ways to identify the best patents. We continue that journey, having built systems that track over 110,000 assets across more than 4,200 deals. These assets were listed from approximately 2,000 sellers and represent filings across about 80 jurisdictions.

Market size

When we take into consideration the asking prices of all of the assets we track, our database covers $12.5 billion of patent assets. We have written programmes to parse the assignment records and have identified $3.1 billion of that market as sold. This is an active market.

Figure 1 shows the market we have tracked for the past six years. We include both private and public packages and we try to determine an overall total dollar value for the patent market. Our visibility into private packages is limited to packages on which we have worked. That said, the dollar value of the market is surprisingly large and diverse.

Figure 1 shows an extrapolation of the market through the first quarter of 2018. Between about $2 billion and $3 billion in new potential packages enter the market every year. The sales data as of the first quarter of 2017 includes only sales for which we have identified an assignment document. Projecting through 2017, we expect the cumulative total sales to reach $3.75 billion.

The remainder of the article follows the flow of a typical purchase process, covering sourcing, asking prices, diligence steps, purchase closing and litigation. It concludes with our estimate of the market size.

Patent brokers

For LinkedIn, we first had to find the patents. Who has them and who is willing to sell?

By far, the most diverse and consistent source of patents is patent brokers – these patents represent the pool of real estate available for purchase. The challenge is similar to the problem of finding real estate for sale before the evolution of the multiple listing services

FIGURE 1. Cumulative sum of asking prices ($ billion) – brokered and tracked private market

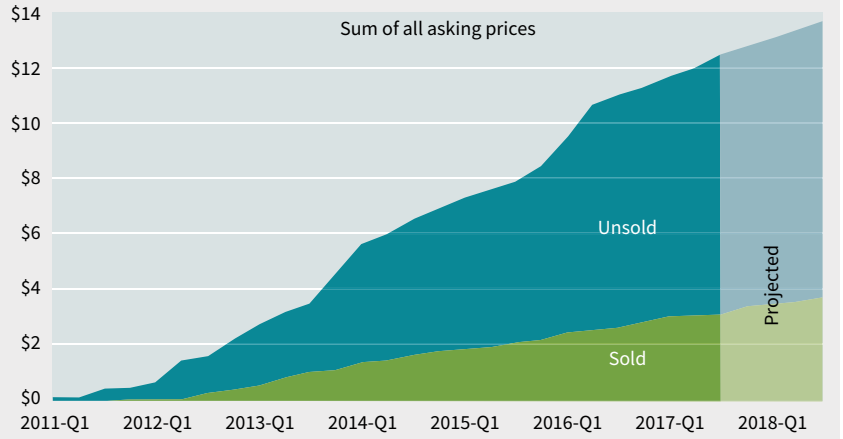


FIGURE 2. 2016 broker sales rates by number of listed packages – brokers in the green circle are doing better; brokers in the red circle are experiencing challenges

Tools and process used to analyse the data

As the brokered patent market matures, access to data has increased. However, the market remains fairly opaque. Therefore, to analyse the market we pull data from many sources, combining this with a proprietary set of tools that we have designed in house.

Our data sources include our proprietary patent package database, the US Patent and Trademark Office (USPTO) patent data and USPTO Assignment database, Derwent Innovation, PatSnap and litigation data from DocketNavigator.

This data is then combined on both a per patent and per package basis, using tools we have developed over the last five years. The result is a proprietary database of hundreds of thousands of records across nearly 500 fields. These tools are programmed in SQL, R, Ruby, AppleScript and VBA using ODBC to retrieve up-to-the-minute live data from our database. We also use business intelligence tools such as Tableau. We continue to expand our capabilities to sort, sift and visualise the data.

We also internally track asking prices, bidding dates, clients' specific diligence decisions and maintain a list of unique entities which are buying and selling with standardised names. We even classify these entities in by entity type which means we have our own internal list of companies we believe to be non-practising entities. Though this process is quite time consuming, we believe that using real data to back up our conclusion is the best way to provide accurate analysis to our clients and lower the barrier to entry for companies joining the market.

system (which today is itself being disrupted by services such as Zillow.) Only those who know sufficient brokers, have sufficient non-disclosure agreements in place and have the money to buy patents can access information about the thousands of patents for sale from brokers.

Brokers offer a unique skill set, including:

- filtering patent assets to identify which ones to sell;
- selecting viable sellers;
- screening patents and identifying those which are important, as well as their claims – this can be crucial for cutting diligence costs by allowing buyers to focus on the most important parts of a package first;
- providing pricing guidance;
- providing guidance for sellers with regard to sales terms and timelines;
- defining the process for diligence, bidding and sales;
- developing evidence of use (EoU) materials; and
- negotiating on pricing.

Brokers also bring to the table an unabashed ability to sell. Many have networks of potential buyers numbering well into the hundreds and they actively seek out specific buyers' needs. Good brokers are able to manage a sales process even where only a small percentage of the contacts may have any interest. When we help a client to evaluate whether they should sell directly rather than work with a broker, we look at whether they have skills similar to those found in patent brokers. Often, these are skills found in a company's corporate development department.

Brokers with five or more packages

The total number of brokers this year fell to 54 (last year the figure stood at 72). We predicted that some brokers would leave the market and that the concentration of packages across brokers would increase – this appears to have happened. On average, brokers listed 8.7 packages each, consistent with last year. Interestingly, for sale by owner listings have also increased and, for the first time, exceeded the listings of the most active broker. For sale by owner listings account for 15.5% of the packages, up from 12.3% last year.

Additionally, a smaller group of brokers continues to bring the majority of the packages to market: 11 brokers brought 10 or more packages to market, while 78% of the packages were brought by brokers who listed five or more packages (up from 72%). The top four brokers accounted for 41% of listed packages (last year 35%). Despite the average listings per broker remaining constant, the shift in concentration of packages to the top four brokers shows a consolidation of market share to fewer brokers. We expect this to continue and will keep monitoring this.

As in previous years, we see little technology specialisation among brokers, with the exception of some brokers affiliated with semiconductor reverse engineering houses and others which focus more on hardware.

As shown in Figure 2, while there were a few brokers who were particularly successful (green circle) or unsuccessful (red circle), those who brought more packages to market failed to show a higher sales rate. Some brokers are clearly struggling with too many packages and too few sales. Surprisingly, the brokers bringing the most packages to the market – 50 or more – were all under the industry sales rate; this year it was for sale by owner listings which effectively set the industry

sales rate. We used the 2016 calendar year for this analysis in order to allow sufficient time for sales to close and be recorded.

Simply put, selling patents is not easy. Of packages listed in the 2016 calendar year, 10.9% have sold at this point in time, showing a slight increase from last year in the same timeframe (10.4%). However, looking across multiple years, overall sales rates are more robust and have significantly increased (see Figure 3). The sales rate for three of the last four quarters are in the top five sales quarters overall. Additionally, the fourth quarter of 2016 is projected to be the best sales quarter since we began tracking the market. We will discuss sales rates in more detail below and continue now by looking at package flow in the 2016 market year.

Other market opportunities

Last year, we reported on two new patent market entrants:

- IAM Market was launched by *IAM*; and
- IP3 was launched by Allied Security Trust (AST).

The two new patent buying and selling marketplaces have brought many more packages to the overall patent market.

In October 2015 *IAM* launched IAM Market, which listed an astonishing 25% of all the packages in the open market for that year. IAM Market is a platform for companies to list their patents and technologies for license or sale. It is positioned not only to list patents for sale but also to showcase which sellers are currently selling patents. Additionally, the amount of marketing materials provided with a given listing is more varied on IAM Market compared to that on the brokered market. Note: the authors are listed as sellers on IAM Market and IAM Market is run by Globe Media Business Group, publisher of *IAM*.

For IAM Market to maintain a listing rate of 25% of the market appears a challenging task. In 2017, listings fell to 12%, 65 out of 542 total listed packages in the overall market, while sales rates were slightly lower than the overall market average. However, one should consider that the average market sales rate includes rates higher than 50% for brokers who actively sell their listed packages and also take 25% of the sales price (IAM Market has an annual flat rate service). IAM Market represents an opportunity for sellers to avoid the 25% broker's fee if they have the internal capability to generate compelling listing material. We have included IAM Market data in the overall data, except as noted.

Another important development in the patent market during the 2016 market year was the launch of IP3, an AST-run industry patent buying initiative. As of October 2017, AST started another round of IP3 using a new set of rules. We will report on the results of this once the public assignment information becomes available. Due to the success of the IP3 model, we have seen interest in other companies creating buying programmes of similar structure – Uber Technologies Inc created UP3, a buying programme which launched on March 23 2017 and which follows a similar structure.

Packages

At 542 packages (772 last year), the patent market has dropped back to its approximate 2014-2015 size. Of this shrinkage, 50% was accounted for by a drop in IAM Market listings, although this was expected, as there was a significant influx of packages when IAM Market started up. Excluding IAM Market, the number of packages fell by 16%. The number of total assets and of US-issued patents also fell (see Table 2). We have benchmarked our deal flow with that of other large corporations and defensive aggregators and have found that the number of brokered packages we and they

FIGURE 3. Actual and projected sales by sales quarter

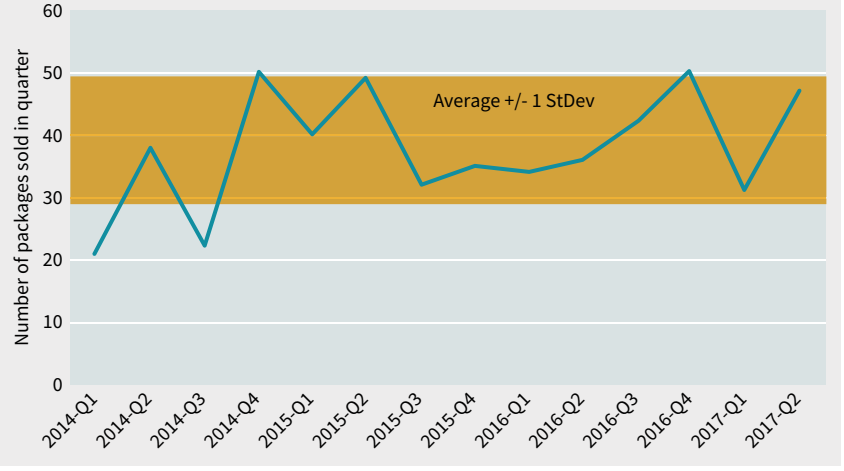


FIGURE 4. Worldwide distribution of assets from 2017 market year

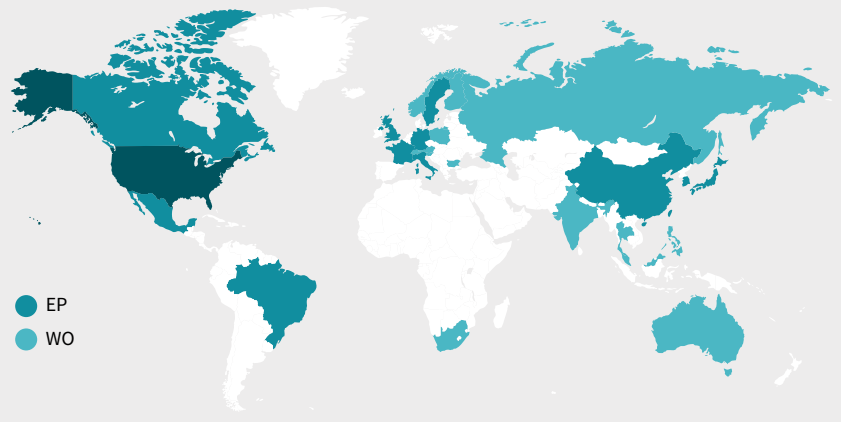


FIGURE 5. Package distribution by technology group

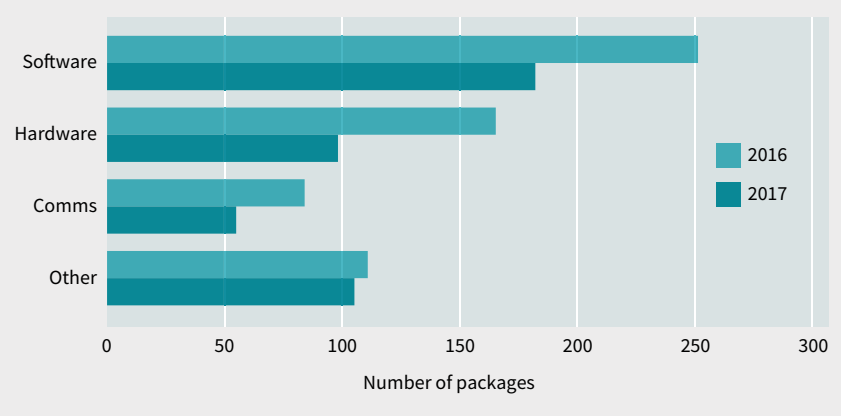


TABLE 1. Brokers listing five or more packages 2017 market year

Brokers
Adapt IP Ventures
AQUA Licensing, LLC
Cerinet
Dynamic IP Deals LLC
ICAP
Iceberg
IP Offerings
IP Pioneer Group
IP Trader
IPInvestments Group
MiiCs & Partners
N&G Consulting
O'Shea Firm PLLC
Red Chalk Group
Reliance Capital
Rui Zhi Ventures Limited
Siskin Capital Ltd
Tangible IP
TransactionsIP LLC
Tynax

TABLE 2. Brokered patent market contents

Market year	2016	2017	2016-2017 % change
Packages	772	542	-30%
US issued	6,981	4,647	-33%
Total assets	11,472	7,620	-34%

FIGURE 6. Word cloud of hot companies, technologies and products

FIGURE 7. Distribution of package sizes (total assets)

receive is similar, so we are confident that our numbers reflect the market. The total number of assets and of US-issued assets decreased fairly proportionally to the number of packages listed. The relative increase in international assets seen last year remained, signifying that the elevated level of focus on international assets continues but that US-issued assets still seem to be the driving factor behind most listings (see Figure 4). While we limit the types of package included in this dataset to the more common type (ie, quasi-public/brokered packages containing 200 or fewer assets), we also track

TABLE 3. Asking prices in the 2017 market

Asking price $	Top and bottom five data points from each set removed 2017	
	Per asset	Per US issued
Average	$176,000	$252,000
Median	$136,000	$200,000
Minimum	$15,000	$23,000
Maximum	$568,000	$925,000
Standard deviation	$140,000	$187,000
Numerical data	358	344

larger bulk deals as well as private deals.

When buying for clients such as LinkedIn, we first looked for packages fitting the general technology fields of interest. Companies do not necessarily buy in their own technology space. "Yes, I realise it is directly in their own technology. Yes, you would think they might want to buy it. No, they are not interested in that technology space; they have enough," is a common conversation. So, we need to classify packages by technology, product and company focus. Even if the patents are perfect, unless the technology is the right fit the client will want us to move on. Similarly, if the patents are directed at the wrong company, they are irrelevant to our client whether they are perfect or not.

Overall, the market continues to present packages from a broad and increasingly diverse set of technologies, products and focus companies. With increased diversity and a healthy number of packages, there are assets available in almost any high-tech category. When we receive a package, we use the package materials to categorise it according to our taxonomy of technical areas. It is a two-tiered classification, with 17 general technical categories and 108 sub-categories. As seen in Figure 5, the distribution of general technologies still skews towards software. The relative distribution of packages has shifted such that the software sector is a larger portion of the market; the largest relative gain is in the 'other' category. This is due to significant increases of listings in the energy and automotive sectors, including solar power, charging, autonomous driving and connected cars. There has been growth in other areas as well, including increased listings on Internet of Things and internet scale data management.

The word cloud in Figure 6 provides another way to visualise the focus of the brokered patent market. The relative size of the words highlights the hot companies, technologies and products identified in ROL Group summaries of the packages. There is a particular emphasis on sellers' materials describing any evidence of use or claim charts. Focusing on the word cloud, one gets a sense of the areas where most packages were marketed in the 2017 market year. Unsurprisingly, the biggest technology companies (eg, Google, Apple and Microsoft) continue to be the favourite targets of patent sellers, but we have also seen an increase in references to Facebook, Samsung, the term 'pay' for payment processing including mobile payments and near-field communication.

Package sizes

The distribution of package sizes (see Figure 7) has remained remarkably consistent over the past few years

but there are some changes that have occurred, primarily concerning a slow but steady shift to smaller packages. This year, 69% of packages contained 10 or fewer assets; last year it was 67% and in 2015 it was 66%. In contrast, the number of single asset packages on IAM Market dropped significantly, from 37% last year down to 3%. Despite there being fewer single asset packages in 2017, it is clear that the overall broker market continues to focus on smaller packages which are more marketable. The average number of assets per package in the 2017 market dropped to 14.1, down from 14.9 in 2016 and 15.3 in 2015.

Pricing

"The average asking price is the worst thing that ever happened to patents…"
- attendee of IPBC 2017

How much should you pay for a patent? Rarely do we meet a seller who thought they were overpaid or a buyer who thought they got a bargain. Price and value are often conflated. Ultimately, a seller should not sell if the value of the patent is higher to them than the sales price. Similarly, a buyer should never buy unless the value to them is higher than the purchase price. At first blush this might seem paradoxical but value, unlike price, is contextual. Thus, buyers and sellers can have distinct values while negotiating towards a single price.

Whether a given price for a package of patents is fair, low or outrageous is challenging in the absence of a truly public market in which a buyer or seller can look at comparable packages. Further, what is a market comparable? By definition, every invention is unique, so how do you compare? Is the average asking price really the worst thing that ever happened to patents? Ultimately, average asking prices set triggers for when you should be asking more questions about the assets and your use case for them.

Specifically, if the asking price of a patent is far above or below the averages for that technology sector, you should ask more questions or be prepared to explain. The average asking price is a guide, not an absolute rule. To the gentleman who boldly stated that "the average asking price is the worst thing that ever happened to patents". Really? We recommend you reconsider how you use this information.

We believe that the availability of pricing data creates liquidity in the market. For example, a novice seller approached one of our clients with a $33 million price tag for his three patent assets. With no other data, he had picked a number that he thought was reasonable. We sent him a copy of our annual market paper, which he used to reprice his assets at a much more reasonable $350,000. This year, we helped a client to buy patents priced at about $1 million per asset (we think justifiably), which is well above the average market price. The average prices are guidelines only.

In 2017, the average price per asset fell by 8.5% and the average price per US-issued patent dropped 5.3%. Therefore, it appears that although the plateau in asking prices last year looked promising for patent owners, the fall has not been completely arrested. Our key takeaway from this pricing data is that the variation in asking prices has continued to reduce. The standard deviations dropped by 18% for per asset asking prices and 11% for per US-issued assets.

FIGURE 8. Distribution of package asking prices (top and bottom 5% removed)

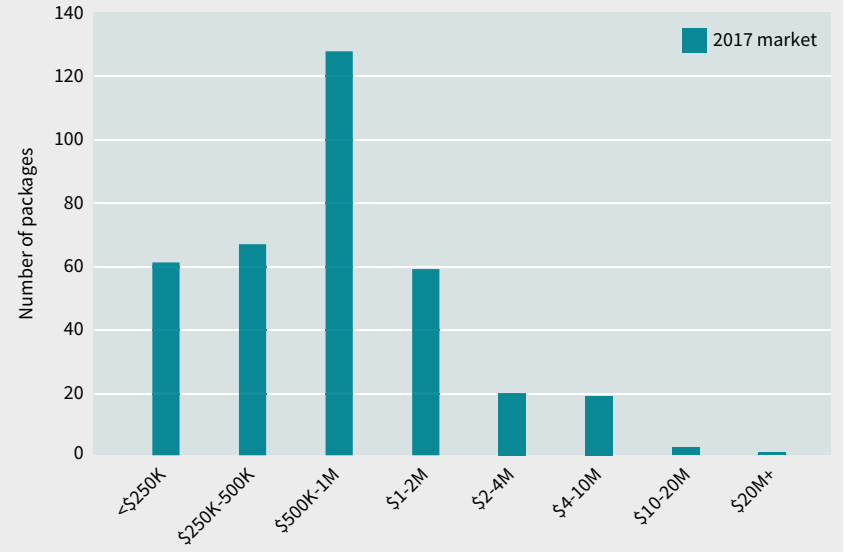


FIGURE 9. Per asset price by package size

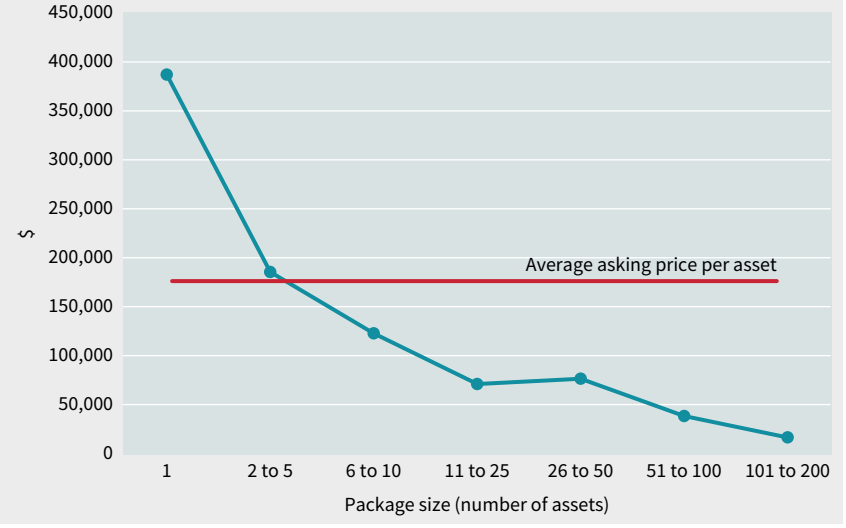


Figure 8 shows the distribution of asking prices. The data shows a continued focus on packages priced between $250,000 and $2 million; 71% of packages fall into this range, up from 64% last year. Here, brokers are able to be profitable, as packages are sufficiently expensive for them to make a significant commission while still keeping purchases within buyers' budgets. We have also seen a greater concentration of packages ranging from between $500,000 and $1 million, 36% up from 29%. This concentration in asking prices, in conjunction with the increased concentration of the package size distribution, is driving the lower variance in asking prices. As the secondary patent market matures, more and more packages are fitting into a standardised mould.

We also continue to track the sub-$250,000 price range separately; we began doing this two years ago. This price range is interesting in that it represents relatively low margins for the broker. The frequency of these packages has remained fairly constant, 17% down

from 18%. Assuming a 25% commission for brokers, a maximum $62,500 commission is possible for these packages. Additionally, when one takes into account the overall low sales rate of packages (more on this below), brokers find ways to lower their costs. EoU was delivered for only 38% of packages priced at or below $250,000, in contrast with 47% of packages priced above $250,000. In buying these types of package, we advise clients to scale down the resources used in diligence and negotiating the patent purchase agreement, unless the buyer has significant plans for the patents. Note: there is little to no pricing information on IAM Market and therefore IAM Market data was removed from this dataset.

Packages with pricing guidance

When excluding data from IAM Market, we saw that 82% of packages came with pricing guidance – exactly the same as last year. We believe that pricing clarifies expectations for both buyers and sellers. Additionally, 31% of packages with pricing guidance had precise asking prices; this is up from 28% last year. Clear pricing guidance helps buyers to make decisions – without guidance, the risk of no decision (meaning no sale) is higher simply because the seller is signalling a potential lack of understanding of where the market is.

Per-asset pricing by package size

We analysed the interaction between pricing guidance and the number of assets in a package (see Figures 9 and 10). Unsurprisingly, on average, price per asset drops considerably as the size of the package increases; from $386,000 all the way down to under $17,000. This is consistent with last year's data, although the fall-off is greater. Last year, the largest packages were still asking for $42,000 per asset. Additionally, the average asking price for single-asset packages stayed the same – in both 2017 and 2016, the asking price for a single asset package was $386,000.

In most cases, we advise sellers to spend the time finding and highlighting key patents and to group those into smaller packages in order to increase the overall price per asset (Figure 9). However, when it comes to large portfolios, bulk packages provide a better selling opportunity. Despite the premium for these key patents, breaking them out may leave a package with a lot of undifferentiated and ultimately unsold assets. In this situation, a seller may get a better return by selling a greater portion of its assets at a lower rate. This calculation continues to be difficult and benefits from up-to-date knowledge of the market and in-depth knowledge of the specific portfolio.

When comparing the per asset price to the asking price for packages, we found that per asset pricing is relatively constant in the pricing brackets from $250,000 to $20 million, with a low of $157,000 per asset and a high of $240,000 per asset (Figure 10). This is the first time we have not seen a significant premium on per asset asking prices in the top two price ranges, which is further evidence of price stabilisation. Because of a limited number of packages in the $4 million-plus range, it can be challenging to draw firm asking price conclusions for those packages. Price per asset continues to remain low for packages with asking prices below $250,000, indicating higher-risk or lower-value patents (eg, no infringement, recent priority dates or almost expired patents).

Asking price by tech category

Technology categories continue to drive asking price variations. When it comes to top asking prices, software has been supplanted by the 'other' category, which includes the automotive and energy sectors. The automotive category demanded 365% of the asking price per asset compared to packages in the communication equipment category.

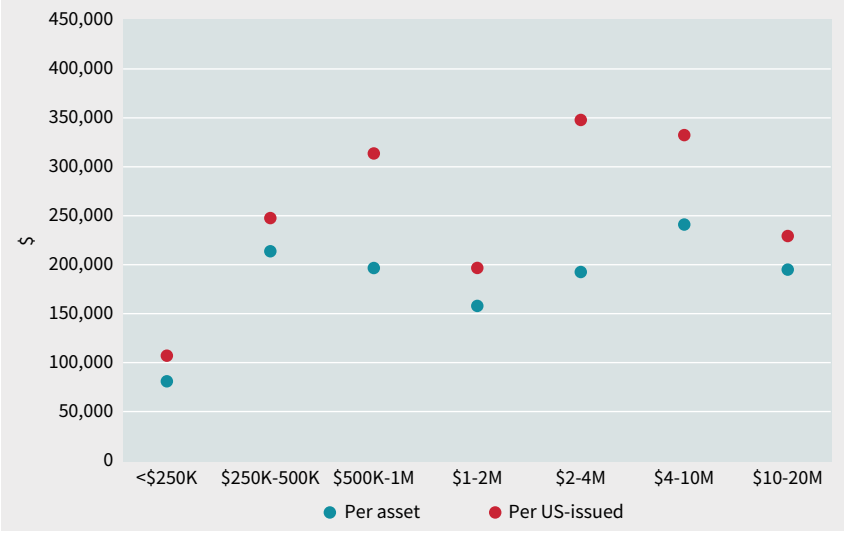
***Alice*-affected technologies**

Technology areas relating to internet computing have finally dropped in price, down to the market average. There has also been a boom in sales relating to these technologies, which is discussed further in the sales section below. The per asset asking price for these technologies in 2017 was $177,000 (effectively the market average of $176,000). Last year the asking price was $233,000, a 21% premium as compared to a $192,000 market average.

Asking price and impact of EoU

Overall, the percentage of deals with EoU dropped to 34% versus 37%. Removing packages that appeared on IAM Market raised the rate to 43%. We believe that there should be a premium for deals where the seller supplies some evidence for infringement of its patents. Every other year, we see a price premium associated with a seller-supplied EoU. This is the odd year with no pricing premium. We know that sales rates are much higher for deals with EoU (see below), but asking prices do not consistently show the premiums we have seen in the past. It is frustrating when first order data analysis shows an inconsistent pattern, especially in an area where, anecdotally, most agree that EoU drives up the price. However, rather than manipulate the data, we must heed Nobel Laureate Coase's warning that "[i]f you torture the data long enough, it will confess to anything". We have usually seen an EoU pricing premium in the past and we believe this year is an anomaly. In aggregate, the data still show that EoU improves sales rates.

FIGURE 10. Per asset asking price by package asking price



Key diligence data

When discussing potential patent purchases, we continue our push to end the use of the phrase 'low quality' to broadly characterise rejected patents. We often hear that there are junk, low quality or weak patents on the patent market. Clearly, there are some patents that we can objectively agree are low quality. However, the majority of patents should never be tested for quality metrics (eg, enforceability) because this is simply too expensive. When buying, you should have a use case in mind and analyse the value of the patents in that particular context. If you want patents to counter assert against IBM, do not waste time and money evaluating clean energy patents. The quality of the clean energy patents is irrelevant.

The term low quality also gets used when the package has no value to a buyer for its particular business use. However, that too is misleading. The buyer made the wise choice to reject the patents based on business criteria which were easier and cheaper to apply and therefore has no idea whether the patents are low quality in a wider sense.

Based on our data, a small percentage of all packages on the market will fit a company's specific business needs. We have proposed that this highly concentrated distribution of value in the patent market is different for each buyer and has a log normal distribution, an extrapolation of Suzanne Harrison's analysis of multiple corporate patent portfolios in her book *Edison in the Boardroom*.

Working with the knowledge that value is highly concentrated, how should you deploy your diligence resources? Figure 12 demonstrates a tiered diligence process to highlight the importance of eliminating ill-fitting packages quickly.

Exploring Figure 12 in more detail, the goal is to identify the 1% to 2% of patents with high value to a particularly buyer's business needs – the thin sliver of green in the furthest left column. The first diligence stage is to test the package for general technology fit test (eg, wearables). The entire brokered patent market is subjected to the test, and the area with a red X, a large part of the market, is immediately eliminated. Patents falling into the area with the check move on to the next stage of diligence and can be seen expanded in the stage 2 column. Stage 2 is to see if the technology described is something of specific interest to the client (eg, a heart rate monitor). The question at this stage could be posed like this: if we assume that the patent is otherwise perfect, would we still buy it? The answer is 'no' 70% of the time. Again, the area with the check moves to the next diligence stage.

The process can continue with multiple diligence phases and two more rounds of diligence are duly conducted. The first stage includes inexpensive tests such as remaining life of the patents, bid due dates and pricing. Again, these are applied to a small part of the full market only due to quickly eliminating packages in stages 1 and 2. Finally, in stage 4, expensive diligence is applied to a small percentage of the overall market.

Table 4 shows the specific reasons that our clients have given for passing on packages as they went through the diligence process described above. In terms of Figure 12, this process begins somewhere in stage 2 because, before we present a package to our clients, we perform stage 1 and some of stage 2 based on buying programme metrics determined when designing the buying programme. After this initial filtering, the number one reason for passing on a remaining package at 45% (20% last year) is "actual market adoption is too small", meaning that

TABLE 4. Reasons for passing on a package where there is a good technology fit

Reason for passing after performing technology filtering	Scaled % of 2017 market	Scaled % of 2016 market
Actual market adoption is too small	45%	20%
Evidence of use fails to map properly	23%	21%
Client-specific buying criteria	11%	7%
Pricing	9%	25%
Unresolved prior art	5%	11%
Remaining asset life is too short	3%	14%
Bids are due too soon	3%	3%
Unresolved prosecution concerns	2%	0%

FIGURE 11. Average asking price per asset by technology group

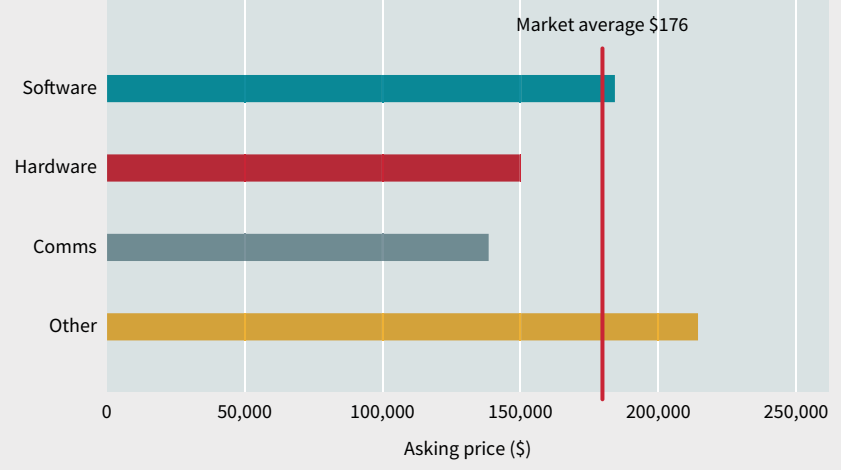


FIGURE 12. Importance of sequencing patent buying diligence

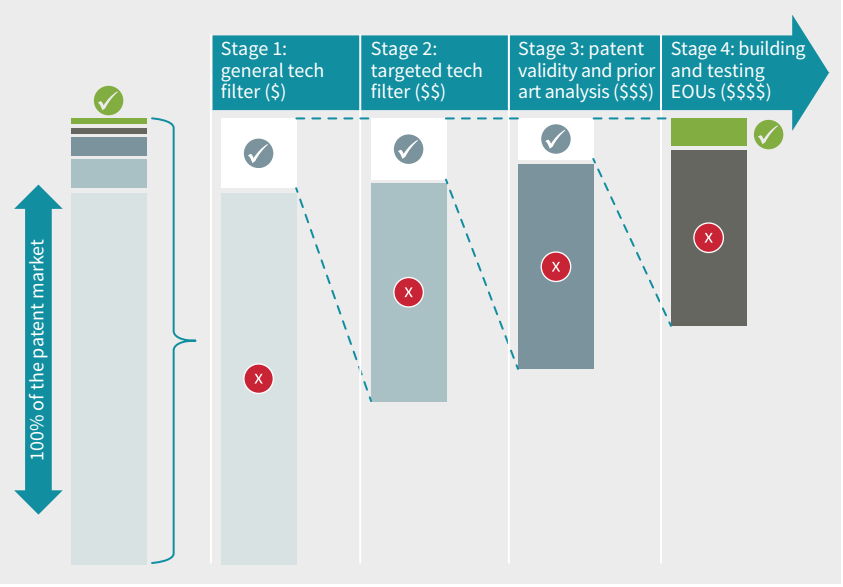


FIGURE 13. Cumulative sales by years from package listing

the technologies described in the listed packages were not adopted. The next top three categories – all of which fit into more serious and expensive diligence work – account for approximately 40% of the reasons for passing at this stage, but only around between 6% and 7% of the packages on the full market. This is because we are able to filter out so much before our clients even see assets. This saves time and money in the diligence process.

Some issues that one would expect to cause client concern end up rarely result in a package being eliminated. Pricing as a reason for passing has dropped from 25% down to 9% this year. We believe that this reflects buyer recognition that the market has matured and that the pricing is more consistent and more in line with buyer expectations. Additionally, buyers know that the price is not 100% firm and that if both sides have reasonable expectations, it is likely that a deal can be struck.

Sales

We tracked sales for LinkedIn for the simple reason that we did not want to spend time reviewing a package that had already been sold. We wrote code to parse the assignment data and to identify deals that were no longer on the market. As a side benefit, this enabled us to see what was selling and who bought it.

In short, the number of transactions has risen and is growing. There have been more sales observed over the past market year (essentially from the third quarter of 2016 to the second quarter of 2017 in Figure 3) than we have seen in any previous market year. Additionally, we have observed more sales of older packages than projected. For example, we are still seeing sales from packages listed in 2012. Generally, desirable packages move fast, followed by a long tail of additional sales. As a seller, patience can pay off.

Turning to the sales analysis, our methodology uses the US Patent and Trademark Office (USPTO) assignments database to identify sales (if at least one patent in a package is found to have a sale assignment, that package is treated as sold) and we use the execution date as the date of the sale (data is limited to packages received by May 31 2017 and to sales recorded with the USPTO by August 21 2017). When discussing sales, we switch to a different data set which includes 2,814 packages, with 620 identified by sales that are measured on a calendar year basis. This sample set includes packages that were analysed in our previous papers and goes back to packages listed as early as 2011.

Our sales rate for 2016 listings within a year of listing currently stands at 10.3%, which is essentially flat with last year's rate (10.4%) for the same relative timeframe. (Note: this is a separate analysis from the total number sales observed regardless of listing year, which has increased significantly, as discussed above.) The increase in total sales is one of the reasons that our projections for the 2016 sales rates (Figure 13) are even higher than those for 2015. We are estimating that by the end of 12 full calendar months approximately 14% of packages will have sold. We then projected the future sales for an additional two years while taking this year's observed increased rate of sales into account. Additionally, an additional 3% of packages listed in 2012 sold this past year, which was significantly more than expected and which suggests that buyers are willing to dig through older packages and then buy them – a good sign for the market as a whole.

All sales data necessarily lags behind the actual market (by up to 18 months).

TABLE 5. Sales rate by package size 2016 listings

Number of assets	Sales rate – 2016 listings
1	6%
<=5	11%
<=10	7%
<=25	14%
<=50	18%
<=100	15%

Sales by package size

We analysed the sales rate based on the size of the package listed and found that the highest sales rate occurred for packages in the 26 to 50 asset range (last year it was 11 to 25 assets) (see Table 5). The sales identification methodology skews towards identifying sales of larger packages. More sales are identified in larger packages because if any asset changes hands, the package is considered sold. We do not account for a buyer cherry picking from large packages. However, contrary evidence of such cherry picking is that if buyers were regularly doing so, one would expect to see a higher sales rate in the 51 to 100 asset range. Additionally, based on this logic, packages in the two to five asset range sold surprisingly well, with the rate up to 11% from 6% last year.

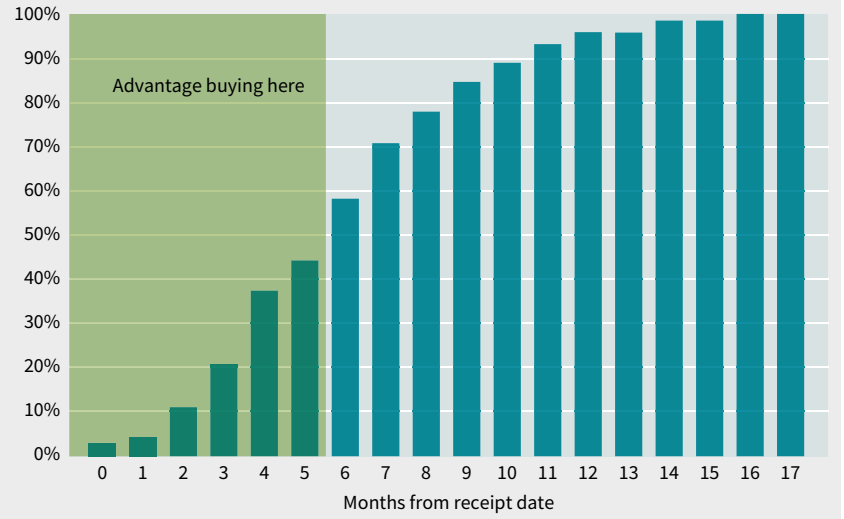
Sales by receipt date

How much time does a buyer have to bid? We know that corporate decisions include a lot of sign-offs, which take time. So, how fast do you need to be? We analysed how quickly packages sell to estimate how much time buyers have to bid. The speed with which buyers review and purchase packages fell for the first time, increasing the time to sale in comparison to last year (though not significantly). We may have hit the limit

of how fast companies can reasonably source, diligence and negotiate a deal. Figure 14 demonstrates that for 2016 listings 80% of sales occurred at just over eight months (down from just under eight months) from the receipt date of the package. We also observed that some buyers are able to move extremely fast, as is evident by around 40% of the packages selling in the first four months (down from 50%). Accelerated decision making continues to be an advantage.

The long tail of late sales years after a package is listed has the effect of pushing the time to close out in Figure 14. Overall, the more automated a buying programme becomes, the easier it is to act fast at the time and to re-examine packages when buying criteria changes. We see the pattern we mentioned last year: quick buying on initial listings and then a second wave of sales starting around 14 months after listing with a very long tail.

FIGURE 14. Cumulative percentage of sales by months from receipt date (2016 listings)



Sales by EoU provided

This year, we continued to see an increased sales rate for packages which have EoU; packages with EoU are 67% more likely to sell than packages without. Occasionally, we hear buyers say that the broker EoU is not helpful but the data suggests otherwise. At the same sale price, sellers can expect a 67% greater return on the sale of a package if they include EoU in the broker material.

Life after *Alice*

We can confirm that *Alice*-affected software and payment package sales have rebounded strongly. Packages from *Alice*-affected technology categories are a whopping 42% more likely to sell than packages in the overall market. However, we are not completely free from the impact of the *Alice* ruling.

We took our 108 technology sub-categories and labelled each as either *Alice*-affected or non-affected. We identified 34 sub-categories – including most software, business processes, social networking and advertising – as *Alice*-affected.

We compared sales rates for the *Alice*-affected areas for the 2013, 2014, 2015 and 2016 market years (June 1 of the previous year to May 31 of the market year) to the respective total sales rates. In last year's article, we noted that there were too few sample points available for the 2016 market year to reach firm conclusions but that we were starting to see a rebound of sales of *Alice*-affected packages.

As Figure 15 demonstrates, before the Supreme Court's ruling in *Alice*, packages in *Alice*-affected categories were selling at above the market rate; the rates then dropped in response to the ruling (2015 market year). It is likely that the fall in asking price, discussed above, in conjunction with greater understanding of and clarity on the impact of *Alice* among buyers, has allowed sales rates of *Alice*-related technology to bounce back strongly.

FIGURE 15. Percentage difference between *Alice*-affected sales rate and total market sales rate

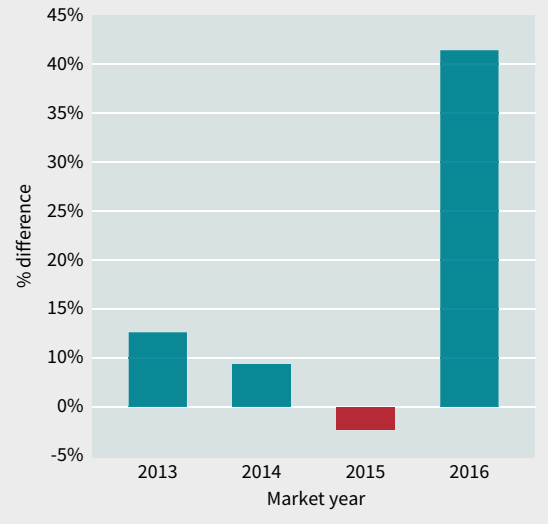


TABLE 6. Repeat sellers (sold in 2016 or 2017)

Seller
Aaron Emigh
Allied Security Trust
ATT
Clifford Sweatte
Cypress Semiconductor Corporation
Foxsemicon Integrated Technology, Inc
Hewlett Packard Enterprise
Honeywell International Inc
Huawei Technologies Co Ltd
IBM
Intel Corporation
MITRE Corporation
Panasonic Corporation
Rovi Corporation (before Tivo acquisition)
RPX
Satyajit Patwardhan
Sergey Mavrody
Siemens
Silent Communication Ltd
Verizon

Sellers

Tracking sellers and their behaviours was also important for operationalising buying at scale for LinkedIn. This is especially true for repeat sellers, who account for a growing portion of the market. Further, the absence of a centralised, public data source, like the multiple listing service, means that knowing who the regular sellers are is key. They are often companies with a large portfolio, so even if LinkedIn might not want a particular package that a company has listed, identifying it as a regular seller enables us to know who to reach. Similarly, tracking the behaviour of such companies with other packages enables us to negotiate the pricing of packages intelligently.

We now turn to sellers of patents for packages received between January 1 2016 and May 31 2017 (assignments were last checked on August 21 2017). As expected, and as shown in Figure 16, sales were mostly by operating companies: 66% (same as last year).

The concentration of package sales is increasing, with a higher percentage of sales coming from a smaller number of sellers. Last year's analysis had 26 repeat sellers accounting for 36% of the sold packages; this year, 20 repeat sellers account for 42%. The 20 entities that sold more than one package were:

- 13 operating companies;
- two defensive aggregators;
- four individual inventors; and
- one university/research institution.

FIGURE 16. Distribution of seller type by sale year 2016-2017

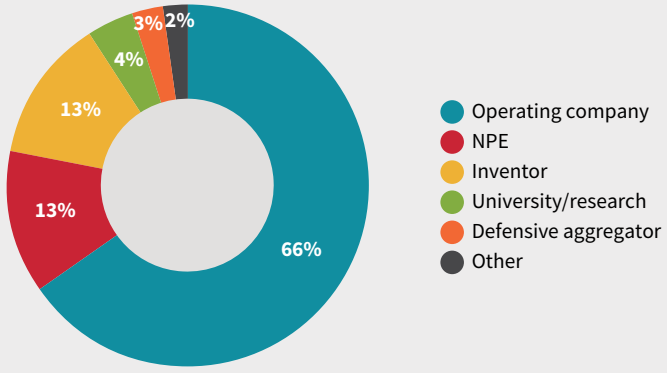


FIGURE 17. Distribution of buyer type by sale year 2016-2017

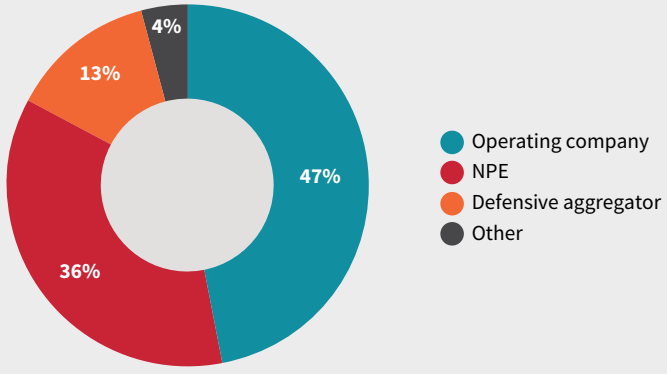


TABLE 8. Litigation and *inter partes* reviews frequency

	Litigations (2012-2017 market year packages)		*Inter partes* reviews (2014-2017 market year packages)	
Package type	Before listing date	After listing date	Before listing date	After listing date
Sold packages	6.3%	14.3%	0.3%	4.5%
All packages	4.2%	5.0%	0.2%	1.4%

TABLE 7. Repeat buyers (bought in 2016 or 2017)

Buyers
Allied Security Trust
Apple Inc
Beijing Xiaomi Mobile Software Co, Ltd
Belisso LLC
Blackbird Tech LLC
Cria Inc
Empire IP, LLC
Entit Software LLC
Google Inc
Huawei Technologies Co, Ltd
Insight Interfaces LLC
Intellectual Ventures
Knapp Investment Company
Kudelski SA
Marking Object Virtualization Intelligence, LLC
Microsoft Corporation
Mobile Synergy Solutions, LLC (Monument Patent Holdings subsidiary)
Munitech IP SARL
Nuance Communications, Inc
Open Invention Network, LLC
Optimum Communications Services, Inc
Pathunt IP Management Limited
Rakuten, Inc
Regional Resources Ltd
RPX
Servicenow, Inc
Sk Hynix Inc
Spectrum Patents, Inc
Taiwan Semiconductor Manufacturing Co, Ltd
Twitter, Inc
Uber Technologies, Inc
Uniloc Luxembourg SA
Vector Capital Corporation

No non-practising entities (NPEs) sold multiple packages this year. These sales accounted for 42% of sold packages, 56% of sold assets and 62% of sold US-issued patents – up from 36%, 48% and 50%, respectively, last year. As we have discussed in previous articles (see "How Intellectual Ventures is streamlining its portfolio", *IAM* issue 77 and "Inside the 2016 brokered patent market", *IAM* issue 81), having cross-licences (or a licence on transfer) substantially reduces a company's exposure to patents from regular sellers. The repeat seller list should be a focus for any cross-licensing strategy (see Table 6).

Buyers

Buyers are the natural counterparts to sellers. Understanding regular buyers was also crucial for our work with LinkedIn. It was vital to understand if operating companies of concern (including competitors) were actively buying in the market. For example, if competitor X was out purchasing patents, that would allow us to adjust our playbook strategy for it. Similarly, if company Y was regularly buying in areas of interest to LinkedIn, we could alter our diligence process and speed to take advantage of the benefit of speed, as discussed above.

While sellers are becoming more concentrated, buyers are becoming more diffuse. Last year's analysis had 28 repeat buyers accounting for 53% of the packages purchased; this year 34 repeat buyers accounted for 57% of the packages purchased. A 21% increase in the number of repeat buyers increased the repeat buyer market share by 8% only.

Operating companies were the largest purchasers at 47% (down from 48%). NPE purchases increased to 36% (up from 34%), while defensive aggregator purchases fell to 13%, down from 15% (see Figure 17). Intellectual Ventures' (IV) buying dropped to six packages only (down from 40 two years ago and 13 last year), and it has announced that it has stopped its buying programmes. It is noteworthy that NPE purchases increased despite IV terminating its buying programme. Arguably, while it is no fun to negotiate with a large NPE such as IV, multiple smaller NPEs may actually present higher costs and greater risks.

During this period, 132 buyers purchased 228 packages, while 34 buyers purchased multiple packages (see Table 7). The top three buyers (Allied Security Trust, RPX Corporation and Uber Technologies, Inc) purchased 14% (down from 21%). Additionally, RPX and AST are tied as the top buyers, purchasing 5% of packages. Like the rest

of our analysis, these numbers include only the brokered patent market and do not include private purchases.

Litigation

The situation has deteriorated for those hoping that a particular patent package would just go away. While we expected some increase in the percentage of patents litigated simply due to the passage of time, instead the numbers have jumped. Of all packages sold, 14.3% (10.2% last year) have at least one US patent litigated after the listing date.

Likewise, rates of *inter partes* reviews for sold packages increased to 4.5% (3% last year), while rates of *inter partes* reviews for all packages, regardless of sale status, remained flat at 1.4%. This implies that sold packages are being asserted and that companies and defensive entities are fighting back against these assertions with *inter partes* reviews. The assets listed for sale on the brokered patent market continue to represent a clear risk of patent assertion for operating companies and highlight the importance of a robust risk clearance function for in-house teams. A combination of cross-licences, licence on transfer agreements or membership of a defensive aggregators can reduce these litigation risks.

Full market size

This year the market roared back to an estimated $296 million from the $165 million estimated last year.

We have continued to reuse the methodologies adopted with last year's paper, utilising the actual observed sales that were executed in the 2017 market year timeframe and their asking prices to determine the market size. As with last year, if no pricing guidance was provided, the average asking price per asset for that market year (eg, $176,000 for 2016 market year listing), was multiplied by the number of assets to determine the expected asking price.

In the 2017 market year, 166 sales were identified,

FIGURE 18. The *IAM* cover from last year's report

TABLE 8. Litigation and *inter partes* reviews frequency

	Litigations (2012-2017 market year packages)		*Inter partes* reviews (2014-2017 market year packages)	
Package type	Before listing date	After listing date	Before listing date	After listing date
Sold packages	6.3%	14.3%	0.3%	4.5%
All packages	4.2%	5.0%	0.2%	1.4%

TABLE 9. Summary of the data

Summary of 2016 Results	
Annual sales	$296 million
Asking price per US-issued patent	$252,000
Asking price per patent asset	$176,000
Package sales rate (cy)	21%
Number of people employed as brokers	180
Sold package litigation rate (tt)	14.3%
All package litigation rate (tt)	5.0%
Packages listed	542
US-issued patents	4,647
Patent assets	7,620
Average number of assets per package	14.1
Median number of assets per package	5
Packages with 10 or fewer US-issued patents	79%

- Table 9 data is market year, June 2016 to May 2017, unless noted
- Calendar year (cy) – calendar year 2016
- Total tracking (tt) – listed June 2012 to May 2017

accounting for a total asking price of $442 million. We know that some of the sales which took place during that period have not yet been recorded – we estimated this to be approximately 3% – so we multiplied this total asking price by 1.03 before applying our standard 35% discount between asking price and expected selling. Thus, our expected total market size for the 2016 market is $296 million, indicating that the market has increased by approximately 60%.

As a check on our methodologies, we looked at the updated sales data to recalculate last year's market size. We now calculate the 2016 market to have been $168 million, as opposed to our estimate of $165 million in last year's article. This strongly confirms our methodological approach to estimating market size.

Using an average commission rate of 25%, the revenue from this market for brokers is $54 million per year. For increased accuracy, we updated our methodology to eliminate so-called 'for sale by owner' listings this year for the broker calculation. By estimating the average loaded labour rate per broker ($300,000 a year), we calculated that there are 180 full-time equivalent brokers. Assuming that three brokers work in each brokerage, this results in approximately 60 brokerages. Our data shows 54 brokerages which listed packages in the 2017 market.

Opportunities, conclusions and reflections

Amid talk of how much further the market might fall, we see that sales are on the rise. Last year, *IAM*'s cover showed a boxer struggling up from the canvas (see Figure 18). That boxer is now back up and fighting. The malaise from years of beatings taken by patent holders obscures what the data makes clear: the market is up by more than 75% year on year. It is time to shake off the despair. Closed transactions are up and growing. We have heard from multiple brokers that this year has been their most profitable for a long while. Certainly it will be one of our highest closing years at between $15 million and $20 million in patent purchases. The market continues to be exciting and vibrant.

Action plan

When buying patents:
- state the business case for buying – identify the specific problem that you are trying to solve;
- model a return for your buying programme;
- arrange your buying operations to reflect that over 90% of the patents will not fit your needs –eliminating those patents from consideration early will greatly reduce your costs; and
- operationalise your buying programme as much as possible – this is becoming more common and is therefore more important for all buyers.

Programme parameters include:
- timeline – this is even more important than in previous years because the packages that are selling are selling more quickly;
- budget;
- buying team authority and responsibilities;
- buying criteria;
- listing of acceptable sources of patent packages; and
- special requirements, such as a whitelist of unlicensed companies.

The following is a fail-fast triage process for eliminating undesirable packages quickly:
- Extract criteria from the business case to identify interesting markets and technologies, and define the diligence needs.
- Undertake a multi-part analysis of markets, technical knowledge and legal analysis where a failure in any one area eliminates the package from further review.
- Track basic information about your programme so that you can learn from your past.

Tips for bidding and buying:
- Build a valuation model to determine a maximum bid price.
- Assume that diligence will take longer than planned.
- Consider adding a consulting agreement with the inventors if they are available.

All in all, we predict that 2018 will be a great year.

Returning to the LinkedIn story, the company's buying programme purchased over 900 patents across a variety of technology areas. The resulting portfolio mitigated risk and resulted in a positive return on investment. We continue to help companies to buy and sell patents using the data and processes we have developed. With $296 million in brokered market transactions last year and new deals arriving daily, we know that a LinkedIn-like buying programme is a good business investment for many more companies. For those looking to start such a programme, the market data allows the IP team to deliver financial models comparable to those used to drive business decisions everywhere else in a company. Similarly, data-driven processes allow for the efficient deployment of resources to find, conduct diligence on and transact patents.

The market and market participants continue to evolve. More access to more data lowers barriers to participating in buying and selling patents, thereby growing the market for all. Today, there is a competitive advantage from using market data – this advantage is evolving into a competitive necessity. We continue in our mission to bring transparency to this otherwise opaque market, enabling opportunities for those who are inclined to look. iam

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