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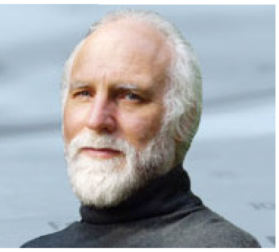
inside information



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Robo-As-Software

Synopsis: ***The age of automated investing is finally here—in an unlikely package.***

Takeaways: ***Emotomy will do a whole lot of things you probably never wanted to do—and more of the things you DO want than the outsourced platforms that most advisors are using today.***

I think most of us know that so-called "robo-advisory platforms" represent the future. A number of advisors are already delegating their smallest accounts to Schwab Intelligent Portfolios, Betterment Institutional or Folio Institutional, or referring them out to Vanguard Personal Advisory Services. There's a simple reason for the trend: their overhead can't afford to provide asset management services, by hand, to clients with less than $250,000 to manage.

Eventually, as the platforms become more sophisticated, advisors will put all clients into the least expensive (operationally) platform, and gain back whatever margin compression they might be experiencing. Because of their cost and because they do what all software does—automate repetitive tasks and make them cheaper to provide—online asset management platforms are going to become ubiquitous. Their algorithms will automatically handle the downloading and reconciliation, rebalancing, and even the assignment of clients to one or more of your model portfolios.

But right now there are disadvantages to using robos for mainstream clients. The robo platforms, so far, require you to delegate your clients' assets to them. Worse, they charge an asset-based fee, which means there isn't a lot of scalability in these solutions. Still worse, most of them greatly limit what you can invest in (ETFs) and are relatively unsophisticated about designing well-diversified client portfolios. To take a simple example, if you want to swap out one ETF for another in a model, and have the switch happen in all client portfolios invested in that model— well, good luck. If you want to build a client's portfolio around a legacy core asset that the client doesn't want to sell, well, you might need even more luck.

> ***There are a number of problems with the existing robo-investing solutions.***

Three years ago, as the robo-revolution was getting underway, I predicted that every advisory firm would be using automated, algorithm-driven investment management systems. But—and this is the crucial distinction—I predicted that their inexpensive, automated robo offering would be part of their software suite, rather than an outsource provider.

Do I have an example of such a thing?

I do now. Let me introduce Patrick Beaudan, creator of an ultra-sophisticated robo software platform called Emotomy (https://www.emotomy.com/).

Beaudan has a Ph.D. in computational physics from Stanford University, and worked for three years as an analyst and consultant at McKinsey & Company before taking on various quant roles with Lehman Brothers. He left the brokerage world in 2005 and founded an investment firm called Belevedere advisors in San Francisco. His new firm was as far from the mainstream advisory profession as you could get: Beaudan specialized in creating portfolios out of ultra-complex investment opportunities like venture capital deals and hedge fund investments on behalf of family offices. "We created an online portal where families that were part of our network could initialize venture capital for early-stage companies," he says. "They could go through all the proposal documents and subscribe online."

The software, he says with considerable understatement, was ahead of its time.

While the robo platforms were trying to figure out the simplest, least-feature-rich investment process they could find, and build algorithms around that, Beaudan was approaching the problem from the opposite direction. As he began vetting hedge fund investments for institutions and family offices, he built an interface that would provide a real-time automated performance report that covered, not just ETFs, not just stocks and bonds, not just mutual funds, but also private and exotic investments whose performance analysis required a bit of mathematical rigor.

"Hedge fund investors like to see their future expected returns based on statistical analysis," Beaudan explains, "so we provided comparisons of each portfolio's track record to U.S. benchmarks and whatever stock/bond/domestic/international benchmark you wanted to build. We calculated the rolling Sortino Ratios in real time, and provided data on each investment's best and worst periods, distribution of returns, running volatility, e-scores, correlations, betas, cash positions, negative and positive months and other metrics—just like the hedge fund one-pager, if you're familiar with hedge fund investing."

The original goal, Beaudan says, was to give the family offices online, real-time access to all the performance data that their sophisticated customers had been asking for over the phone, on an individual investment and overall portfolio basis. "It was built really to save me having to answer all these questions over and over again," he admits. "I wanted them to be able to find the answers themselves."

Hedge fund investors found Beaudan's automatically-trading Permanent Portfolio fund to be somewhat boring.

Before long, some of his clients were asking whether Belvedere could manage assets for their kids, friends and relatives. The problem: they weren't qualified to put their money in hedge funds or private equity deals.

"At first, I turned them away," Beaudan explains. "I said, that is not what we do. But then," he adds, "I realized that most of the infrastructure was already built, so it wouldn't take much time on my part to do the ongoing management."

What apparently didn't occur to him was that he was about to give birth to the most sophisticated robo solution on the market.

Automated complexity

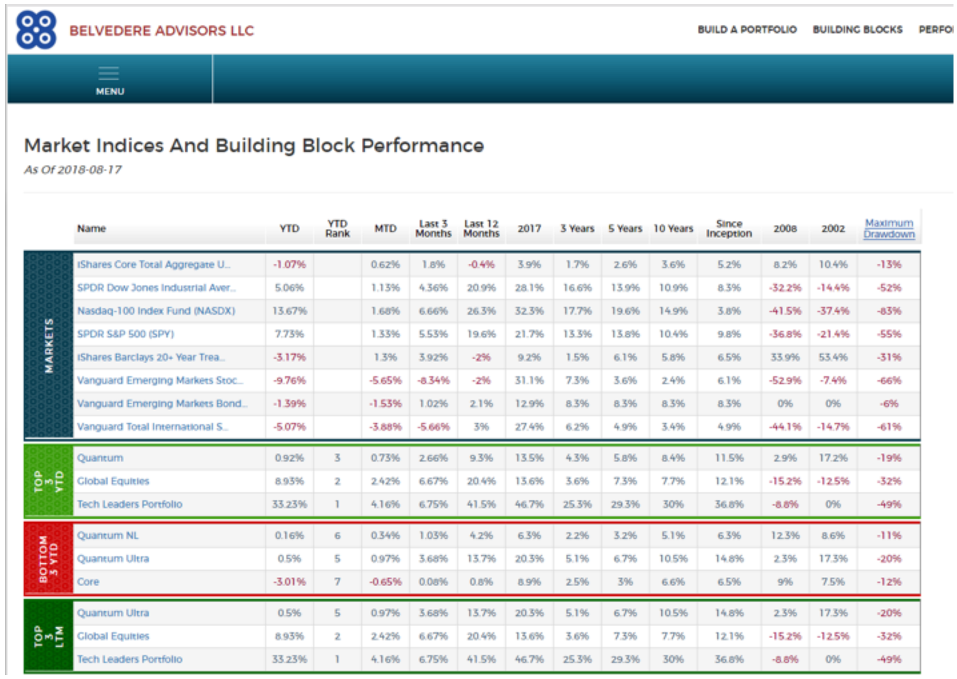
To give the same investment sophistication to the kids as he was providing for the parents who were qualified investors, Beaudan created a lot of automated complexity using traditional investments. He started with an offshoot of the Permanent Portfolio fund, which trades automatically with a goal of 6-7% annualized long-term returns, net of trading costs and fees, delivering much less downside risk than the 70/30 stock/bond mix that was the portfolio's benchmark. His sophisticated models suggested that the core strategy would lose 10% in significant bear markets, compared with 35% for the more traditional asset mix. "We launched the core portfolio on January 1, 2011," says Beaudan.

The original portfolio was popular, but many of the clients—all of them hedge fund investors—found it somewhat boring. "They said, can you do something sexier?" says Beaudan. "So I developed other strategies, like a dual-momentum strategy, which is an equivalent of Ray Dalio's beta portfolio, and a quantum ultra portfolio which is similar but twice levered, and we built a global equity strategy that engages in equity rotation."

The point here is not that any sane advisor would use these strategies him/herself with clients. The point is this: here was an automated platform that provided every performance metric (and many more) that an advisor might want to show to clients, updated daily, which accommodated any listed security on the market, and which would do not just simple things like automated rebalancing, but more sophisticated processes like determining when to buy and sell according to a momentum strategy, or create a stop-loss on any individual security and then automatically buy back in based on preset parameters.

Eventually, all of Belevedere's clients switched out of hedge funds and were investing in these complex-but-less-expensive strategies that Beaudan had built for them—and his little advisory firm was building new ones, on a customized basis, as he took on new clients. "We started getting institutional clients as well as retail clients—two commercial banks and a number of mid-sized RIAs," he says. "They could make their own investments on the platform, and they could build them around securities they already owned. It was all very scalable."

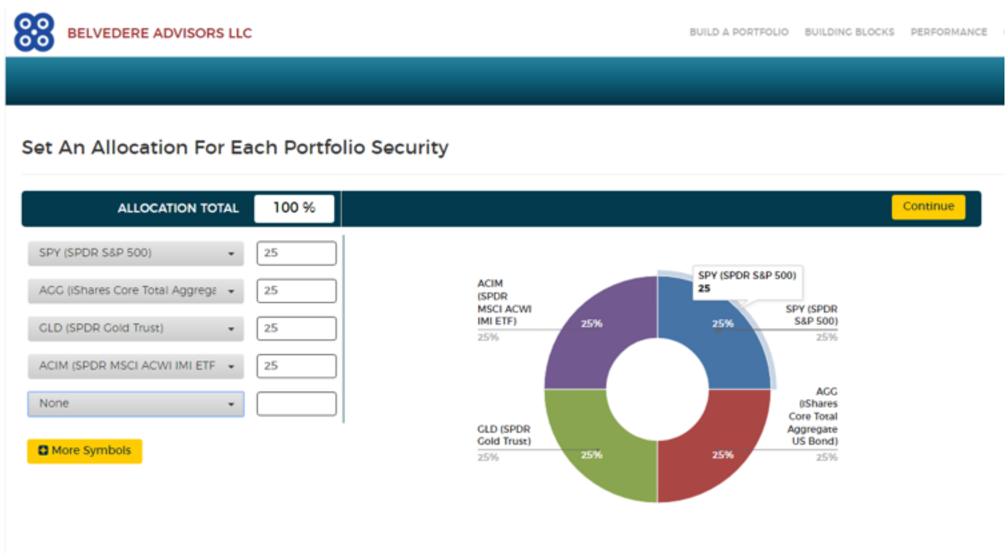
Emotomy was born.



Market Indices And Building Block Performance

As Of 2018-08-17

	Name	YTD	YTD Rank	MTD	Last 3 Months	Last 12 Months	2017	3 Years	5 Years	10 Years	Since Inception	2008	2002	Maximum Drawdown
MARKETS	iShares Core Total Aggregate U...	-1.07%		0.62%	1.8%	-0.4%	3.9%	1.7%	2.6%	3.6%	5.2%	8.2%	10.4%	-13%
	SPDR Dow Jones Industrial Aver...	5.06%		1.13%	4.36%	20.9%	28.1%	16.6%	13.9%	10.9%	8.3%	-32.2%	-14.4%	-52%
	Nasdaq-100 Index Fund (NASDX)	13.67%		1.68%	6.66%	26.3%	32.3%	17.7%	19.6%	14.9%	3.8%	-41.5%	-37.4%	-83%
	SPDR S&P 500 (SPY)	7.73%		1.33%	5.53%	19.6%	21.7%	13.3%	13.8%	10.4%	9.8%	-36.8%	-21.4%	-55%
	iShares Barclays 20+ Year Trea...	-3.17%		1.3%	3.92%	-2%	9.2%	1.5%	6.1%	5.8%	6.5%	33.9%	53.4%	-31%
	Vanguard Emerging Markets Stoc...	-9.76%		-5.65%	-8.34%	-2%	31.1%	7.3%	3.6%	2.4%	6.1%	-52.9%	-7.4%	-66%
	Vanguard Emerging Markets Bond...	-1.39%		-1.53%	1.02%	2.1%	12.9%	8.3%	8.3%	8.3%	8.3%	0%	0%	-6%
	Vanguard Total International S...	-5.07%		-3.88%	-5.66%	3%	27.4%	6.2%	4.9%	3.4%	4.9%	-44.1%	-14.7%	-61%
TOP 3 YTD	Quantum	0.92%	3	0.73%	2.66%	9.3%	13.5%	4.3%	5.8%	8.4%	11.5%	2.9%	17.2%	-19%
	Global Equities	8.93%	2	2.42%	6.67%	20.4%	13.6%	3.6%	7.3%	7.7%	12.1%	-15.2%	-12.5%	-32%
	Tech Leaders Portfolio	33.23%	1	4.16%	6.75%	41.5%	46.7%	25.3%	29.3%	30%	36.8%	-8.8%	0%	-49%
BOTTOM 3 YTD	Quantum NL	0.16%	6	0.34%	1.03%	4.2%	6.3%	2.2%	3.2%	5.1%	6.3%	12.3%	8.6%	-11%
	Quantum Ultra	0.5%	5	0.97%	3.68%	13.7%	20.3%	5.1%	6.7%	10.5%	14.8%	2.3%	17.3%	-20%
	Core	-3.01%	7	-0.65%	0.08%	0.8%	8.9%	2.5%	3%	6.6%	6.5%	9%	7.5%	-12%
TOP 3 LTM	Quantum Ultra	0.5%	5	0.97%	3.68%	13.7%	20.3%	5.1%	6.7%	10.5%	14.8%	2.3%	17.3%	-20%
	Global Equities	8.93%	2	2.42%	6.67%	20.4%	13.6%	3.6%	7.3%	7.7%	12.1%	-15.2%	-12.5%	-32%
	Tech Leaders Portfolio	33.23%	1	4.16%	6.75%	41.5%	46.7%	25.3%	29.3%	30%	36.8%	-8.8%	0%	-49%

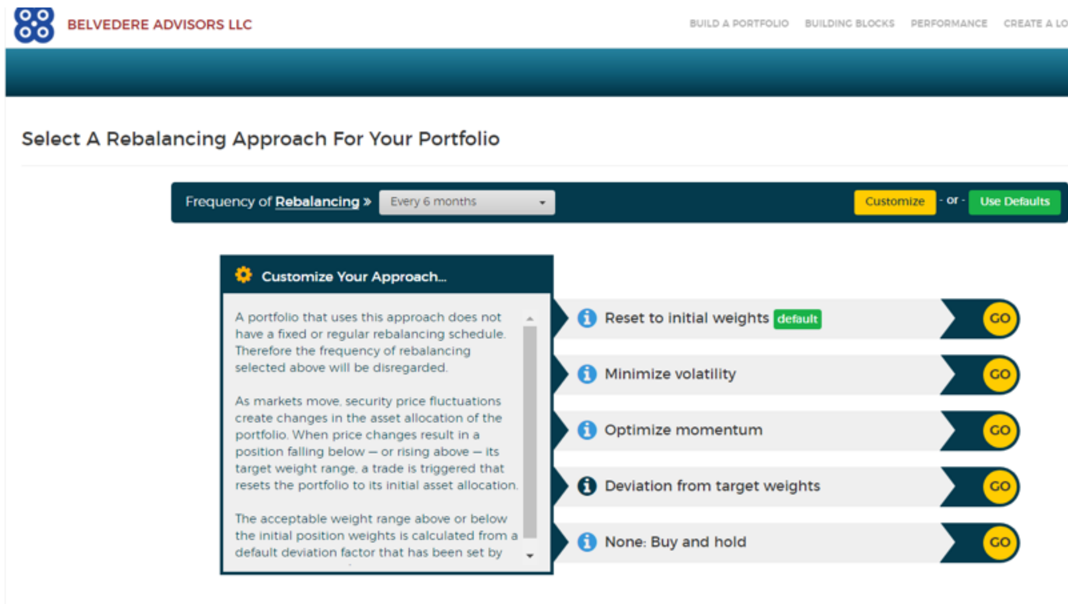


Feature Set

How long did it take Beaudan to realize that he could offer his new Emotomy platform to other advisory firms as the first robo-as-software product?

"The RIAs came to me and said, this platform looks good. Instead of you managing the assets—which I wasn't really doing anyway—why don't you let us use it for ourselves?" says Beaudan. "They told me flat out they weren't going to use any of my strategies," he adds with a rueful tone to his voice. "It would be their brand, their clients, their paperwork, their strategies."

Of course, the advisors asked for a number of features. Emotomy comes with a built-in investment policy statement generator that defines how portfolios will be built and managed, which (where applicable) feeds right into the automated trading algorithms. U.S. equities will make up between 20% and 40% of the portfolio? The system will either alert or trade if those parameters are breached. Rebalancing once a quarter or once a year? The system will handle that automatically on the assigned dates—and you can define the dates or, alternatively, the tolerances, and whether the system will rebalance back to the original allocations or



any of a variety of alternatives.

Beaudan also had to add trading capabilities, which meant interfaces with the leading custodians. Currently, there Emotomy features straight-through processing with TD Ameritrade Institutional, Trust Company of American and Pershing. Beaudan has been in negotiations with Schwab, and the Emotomy user would feel as if the software has straight-through processing with the profession's largest independent custodian, but in fact Emotomy's staff actually takes the Schwab Advisor Services trades and automatically downloads them into a spreadsheet that is then automatically uploaded into the Schwab trading system. "It's a little more labor intensive," Beaudan admits. "We're hoping we'll get the full integration later this year."

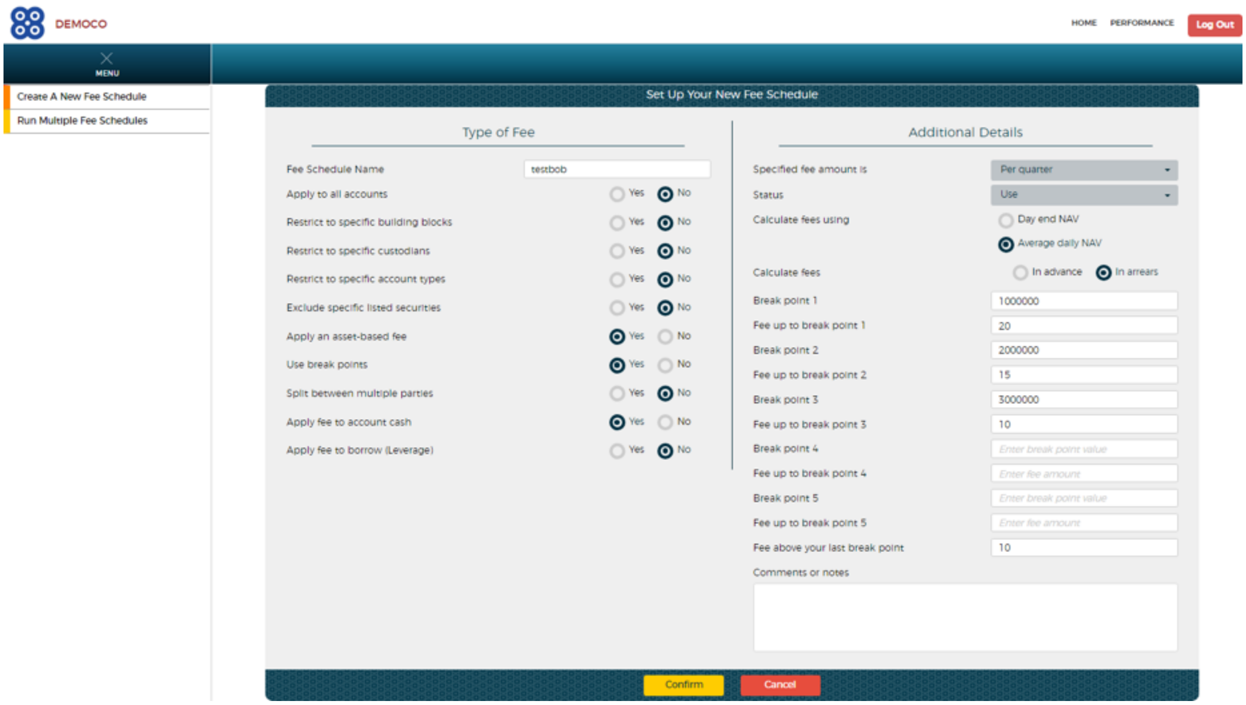
Beaudan says that an Emotomy user could theoretically run a hedge fund off the system, and seems more than a bit disappointed at the plain vanilla ways that most advisors are using it. "You can evaluate your positions based on a lot of different metrics every day, automatically," he says. "I'm managing about 30 different strategies where Emotomy is doing that right now. It automatically computes the trades in each client's account that corresponds to the strategies. Each end client might have a portfolio that has multiple strategies, so computing the trades in these accounts can be very complex—and that is something we do automatically."

Of course, I brushed this off and steered the conversation back to the boring plain vanilla stuff. Can an advisor bring into Emotomy a client's existing portfolio, without having to sell everything? ("Yes, of course," with the implication that this is a dumb question.) Can clients see as many or as few of the performance metrics, and maybe turn off things like the rolling Sortino Ratio calculation? ("Certainly." Yawn.) Is the client performance portal white-labeled to the advisory firm? ("Yes.")

Beaudan tried to turn the conversation to more exciting features, like a feature that automatic applies stop losses, either on the portfolio as a whole or any individual security in any of your models. When a certain loss threshold is breached, Emotomy will automatically liquidate that position, and you specify what will cause the system return to the market—either when that position or portfolio has recovered by some amount (say 5%), or at the next rebalancing date. I don't actually know any advisors who would use that feature, but it suggests that future portfolio management processes might incrementally grow more complicated with the features available.

One performance calculation that advisors might want to include is the maximum draw-down for a particular portfolio mix; that is, what that portfolio would have lost during the worst bull market going as far back as Emotomy's data provider offers (different for different asset classes). This is peak-to trough, and also shows the time to recovery. You can also make up a customized benchmark of the asset mix that the your model portfolios are tracking and show long-term performance (including back-testing) of the model portfolio graphed against the performance of an index or customized benchmark.

The newest addition, a billing feature, would seem to account for every possible way that advisors would want to debit their fees from client portfolios. You can set fee schedules globally for all clients, but apparently nobody uses that feature. "One company that uses our system has hundreds



of different fee schedules that are practically customized to every client," says Beaudan, "and they were telling me that it has been a total nightmare. They run it through our system and it makes it pretty easy."

You can select an individual client or an account, or a group of accounts, or a model portfolio, and then click a box to determine whether there are breakpoints to your AUM fees. Check the box, and then input your first level, and the amount you will be debiting up to that portfolio amount, and how often (say, $1 million, 25 basis points, quarterly). You can specify frequency from yearly down to daily, although Beaudan admits that once again, advisors are pretty boring and typically choose quarterly. Then you set the second breakpoint (let's say, for the sake of argument, $2 million), and specify the lesser amount (20 basis points quarterly?) that will be charged on that next higher amount—and so forth, with no apparent limit to how many breakpoints you can define.

And here's a nice feature. If a client brings you a legacy asset, you can exclude that particular asset from the billing process. And, of course, you can exclude cash from the billing process by clicking a box. (But be careful about how the SEC views this.)

As an alternative, you can dispense with AUM altogether, and specify a flat monthly, quarterly, semi-annual or annual retainer fee, on any or all accounts or each household, and let that be what the system debits from client accounts.

Cost? Emotomy costs $600 a month for smaller firms, up to $2,000 a month for larger ones. Plus another 10 basis points a year for the automated trading (including automated rebalancing) features that many advisors may not want to include. I told Beaudan that most advisors prefer flat fee pricing to percentage-of-asset fees, and he said that this fee is negotiable.

Robo-in-Action

I was curious how users viewed Emotomy. If my prediction is right, advisors would eventually replace a lot of their back office staff, and the Black Diamond or PortfolioCenter software, with a less labor-intensive, less expensive robo solution for client portfolios. Are Emotomy users doing this now?

Joanne Woiteshek, founder and COO of Interactive Financial Advisors in Oak Brook, IL, has been using Emotomy pretty much from the start—for the past six years. The firm clears through Trust Company of America (now described as *TCA by E*Trade* since the merger), and uses mainly boring ETFs for client portfolios. Although the firm is not a broker-dealer, it has 60 advisors who have their own offices around the country, but manage their assets through Interactive Financial

Advisors, primarily working with middle market consumers. "Our average account size is around $75,000, and everybody uses our models," she says. "It made everything much more efficient."

Woiteshek's favorite Emotomy feature is something Beaudan failed to mention to me in our interview: a portfolio analyzer that automates the evaluation of a client's existing portfolio and then recommends—if appropriate—one of the firm's models. It shows the existing portfolio's performance against benchmarks vs. the proposed one, along with the draw-down statistics referenced earlier.

Her second-favorite feature was also not brought up in my interview with Beaudan: a tight integration with Redtail, the CRM program. "If somebody goes in and does a model change, they put a note in Redtail that it was done," says Woiteshek.

Her third-favorite was (as you might have guessed) not part of my initial interview either: paperless client paperwork, with e-signatures all handled online, through Emotomy via TCA by E*Trade. "It took them 18 months to get it all synchronized, so that everything was done on the screen," Woiteshek says. "But they did it. No physical paperwork. And this isn't just the account transfer paperwork," she adds; "it's OUR paperwork as well, all done through DocuSign."

These forms can be auto-populated through Redtail, allowing the client agreements as well as the custodial forms and, if you wish, the investment policy statements to be handled in seconds online instead of through snail mail.

Emotomy now offers paperless client paperwork, not just the account transfer, but all of your client documents and agreement forms.

The key question, though, remains: can Emotomy take the place of one of the back office software solutions?

For Interactive Financial Advisors, it can. "We tried Black Diamond, but it was a nightmare to use," says Woiteshek. "So we just use Emotomy for all of it."

Advisors can create portfolios directly in Emotomy, all the while evaluating whether adding this or that security will increase or decrease the downside risk and the Sharpe Ratio. "You can do these things fairly quickly," says Woiteshek. "You can click on the blue links, and it explains the definitions of anything you want to know, which is educational for some advisors. There are really nice videos to train advisors on how to use it right away. The clients and advisors are getting updated values on all portfolios, and you can pull in many different kinds of reports for your client, with as many statistics as you think they might want to see."

But the firm doesn't post this information into client vaults, or send clients to the Emotomy website to see it for themselves. Instead, advisors pull the reports weekly, and send them out to clients by email.

And, interestingly enough, Woiteshek's advisors trade directly through TCA by E*Trade. "You CAN trade through Emotomy; we just haven't turned that on," says Woiteshek. She is not concerned about all the exciting automated features that this leaves out. "Because we're dealing with smaller accounts, trading by models rather than individuals," she says, "it is really easier for us to trade directly with the custodian."

I have heard advisory firms complain about having to refer their smaller clients to an automated advice platform, rather than have those assets in-house as they would with robo-as-software like Emotomy. I have heard advisors complain that, as the asset management portion of their value proposition declines, the asset management software programs they use are getting more expensive. I've heard many complaints that the automated platforms won't accept the client's existing portfolio, and won't let you do customized billing, or invest via anything other than ETFs.

All of those complaints seem to me to be entirely justified. They suggest that the future of automated asset management is not here yet.

But now that I've seen Emotomy, I'm thinking that not only is it here, but perhaps it is even more sophisticated and flexible than most advisors need. The challenge for Emotomy is that Beaudan comes to the advisory world from a flashier investment background than most advisors are familiar with, and he tends to lead his presentations with bells and whistles that most advisors are not going to be interested in, leaving out plain vanilla features that advisors are hungry for.

I checked back, and you cannot, yet, do a DocuSign sign-on process with clients, and move assets into a custodial account, through anybody other than TCA by E*Trade. But as the other custodians become more comfortable with alternatives to wet signatures, that day is just around the corner, and Emotomy has a lead. The robo platforms simply let you transfer assets, without bundling your client agreements and other paperwork into the process.

My conclusion is that Emotomy is currently being mis-marketed to the advisory profession, which explains why you haven't heard about it before now. You aren't going to want to day-trade hedge funds, insert stop losses by individual security, or perhaps even build client portfolios with an eye to how every asset you add affects the Sharpe and Sortino Ratios.

But for the basic things that portfolio performance reporting software does—build portfolios, build models, trade, bill out of the portfolio, create automated investment policy statements and keep clients apprised as to how they're doing compared with a benchmark—Emotomy seems to be the robo-as-software solution we've been waiting for.

Ignore the fancy bells and whistles and take a look at whether the program can do all the things you've been complaining are missing with the competition. I think you might be surprised.

Here's the link: check it out for yourself: *https://www.emotomy.com/*.

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