



Spotlight On

ERNST & YOUNG



DR. RASHMI JOSHI

Ernst & Young is a global leader in assurance, tax, transaction, and advisory services. We interviewed Assistant Director Dr. Rashmi Joshi at the 2011 European Tableau Customer Conference. She told us that her team uses a wide range of software to analyze data, but relies heavily on Tableau visualizations for relaying data to clients. “We find it very important to make sure our outputs are as understandable as possible,” she explained. “That’s where Tableau really comes into its own.”

TABLEAU:

First, can you tell me a little about what your forensics practice at Ernst & Young does?

RASHMI:

It's known as the FIDS practice—the Fraud Investigation and Dispute Services practice. We work in a very broad spectrum of providing analytical service relating to identifying factors related to fraud and forensics. We also work within investigations, and we work within the anti-bribery and corruption fields as well.

We look at all types of fraud that can be coming from all types of different data sets, whether or not those data sets are transactional data in form. So, they may be data sets that reside within clients' systems, such as payment procurement-related data. We also try to uncover elements of unusual patterns or unusual behavioral activity within unstructured data sets of text data – such as emails, instant messages, or SMS text messages that are exchanged in an organization from employee to employee.

TABLEAU:

How do you use Tableau?

RASHMI:

Use of analytical services and analytics in general has grown immensely—certainly in the UK market and the global market as well. What we're finding is that as the demand for such analytical services has grown, so has the need for translation of the outputs that are provided from these analytical techniques. The translation is really as important as the underlying methodologies that are used to analyze the data.

Because we're conveying the results of quite important analytics to a variety of individuals across an organization—from analysts and end users right up to C-suite professionals—we find it very important to make sure our outputs are as understandable as possible. That's where Tableau really comes into its own.

TABLEAU:

Can you give me an example of what kind of visualizations you might provide for a specific audience, such as executives?

RASHMI:

With our Fraud Triangle Analytics service, we analyze emails related to employees within an organization. We're trying to uncover factors or behavioral indicators of fraud by analyzing unstructured data—in

“We’ve found that through our use of Tableau, our clients are able to understand the outputs more readily than with scripts that are residing with an underlying structure, such as SQL.”

the Enron example, for instance, emails relating to those custodians, the email inbox owners.

We perform all of our analytics within SQL and compute fraud scores that will identify errors that need further investigation. Those computations are then fed directly into Tableau. Tableau outputs them very quickly into a visual format, so they're very easy to understand. So, for instance, we have four-dimensional charts that help to hone in on individuals that may need further investigation.

TABLEAU:

So how do you get the unstructured data in for analysis? That's a big question these days.

RASHMI:

It certainly is. There are a variety of different ways you can deal with unstructured data, and we have a very strong text mining analytics function within our practice. Again, Tableau represents that translation layer from the underlying calculations to outputs that are easily presentable.

TABLEAU:

You're really using Tableau as a communications tool to represent the data to your constituencies.

RASHMI:

Absolutely right.

TABLEAU:

How big are the volumes of data you deal with?

RASHMI:

Our data sets vary from a few thousand rows all the way to millions upon millions of rows. That's why we sometimes use underlying formats such as SQL. Sometimes we perform our analyses in Excel. We work with many different software packages. While there are lots of software packages and statistical packages that do have visual outputs as a result of their analytical process, we find that Tableau works in a very efficient manner with our large volumes of data. We tend to feed in our analytical results from engines such as SQL.

TABLEAU:

Do you connect to different databases directly, or do you use the in-memory data engine?

RASHMI:

We actually connect to different databases directly, which we find to be a very useful feature. It gives us lots of transferability with regards to our underlying data structures. We work with SQL. We work with Oracle. We work with a whole variety of different databases.

TABLEAU:

Can you tell me about any "aha" moments you've had using Tableau for fraud analysis?

RASHMI:

We've had quite a few "aha" moments using Tableau. One example has to do with what I mentioned earlier about analyzing text data. We perform a range of text mining analytics using the SQL engine, and then we feed the results into Tableau. Tableau very quickly gives us a four-dimensional graphical representation of our data. Each element

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of that chart is related to an individual of interest. So we're using the ordinary two-dimensional axis, in addition to a third axis, in addition to a fourth dimension that encapsulates the area of interest—the individual that wants further investigation. We can very rapidly see who the main culprits of interest are when trying to identify fraud, and indeed, attributes that were indicative of fraudulent activity.

When faced with a huge data set, or even a medium-sized data set, it's often very, very difficult to sift out all of the unnecessary elements. That's one of our main analogies – trying to remove as much of the noise from the data as possible. There have been many times when Tableau has quickly pinpointed areas of investigation that would be very difficult to visualize otherwise.

Through the use of various calculations that are generated through underlying engines, one can spot numerically or have some sense for where further investigations would be warranted. But when you have visual depictions of the data and the outputs are able to help you hone in visually, that becomes a real tool. The speed and ease of use adds a lot of value, both from our perspective as investigators and forensics data specialists, and from the client's investigative perspective as well.

TABLEAU:

How many people are using Tableau at Ernst & Young?

RASHMI:

We have a team of around twenty Forensics Data Analytic Specialists within the broader Fraud Investigation Dispute Services Team. At the moment, we have between fifteen and twenty users of Tableau. We use Tableau on an intermittent basis, as projects arise that warrant it.

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When presenting results to our clients, we've noticed that the main area of interest in our outputs will be Tableau. Amongst a range of other visual depiction software tools that we also use, Tableau seems to be the one where clients tend to very much like the layout, the ease of use, and the transparency.

TABLEAU:

What have you found to be the main benefits of using Tableau?

RASHMI:

Well, certainly the ease of use for both end users and analysts, and also the ability to convey our results visually to a range of different audiences. We deal with all manner of different individuals across various organizations. We work with the analysts directly. We work with people who are working within the IT systems. We are sometimes in the boardroom helping to enable strategic decision making.

When you're dealing with executives, they're very fascinated by the types of techniques we're using, but more importantly, they'd like to

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“... for instance, displayed visually with a variety of different diagrams. With Tableau, the picture can say 1000 words.”

understand the results of our outputs. That's where Tableau has been very, very beneficial. It provides ease of visual representation, transferability, transparency, and it also conveys technique. The audience can see very quickly that the results are quite sophisticated—underlying mathematical modeling techniques, for instance, displayed visually with a variety of different diagrams. With Tableau, the picture can say 1000 words.

TABLEAU:

What would you say to someone who is considering Tableau for data analysis?

RASHMI:

Tableau is so easy to use, and that's very important because a lot of analytical functions tend to employee people across many different levels. When you lose ease of use, misinterpretations can arise in the data analyses. So that's an important factor. It's really easy to get to grips with Tableau as a tool.

The other recurring theme for us is ease of representation. You need to really try to understand what type of visualization, what type of representation of the data will be most beneficial for your client – and certainly for yourself as well.

TABLEAU:

Any final thoughts on Tableau or what you've been able to achieve with it?

RASHMI:

It's a very valuable tool. From an interpretational and representational perspective, it's been extremely beneficial for our organization. It's also aesthetically pleasing. That visual appeal has helped us to bridge the gap between performing analytics and actually being able to translate our outputs to a broad variety of audiences.

Tableau Software helps people see and understand data.
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