Predicting Solutions for Hardware Failure

Known for its high-quality customer service, Oracle sought out a partner to help it think creatively about how its Systems Support team could more effectively use data to streamline their service request processing.

To address this need, Datascope led a two-day immersive workshop with the Oracle team to rethink how Oracle could use data to improve how efficiently it handled service requests.

Datascope then worked side-by-side with Oracle to build a prototype predictive resolution engine that was capable of automatically resolving inbound services requests with an accuracy that rivals human classification, all while communicating this information effectively to all the relevant parties in Systems Support.

"The collaboration with Datascope has been a critical piece of our Big Data project's success. They helped fill in the gaps in our team and accelerate innovation, training us to be self-sufficient along the way. I look forward to a continued partnership."

Sue Zwinger
VP & GM Global Systems Support,
*Innovation & Technology Office*

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Where to start?

When starting a big data initiative, there seems to be a plethora of ways to get started. What types of problems can we reasonably expect to solve with "big data"? How can we communicate our analysis of these problems to key stakeholders? Do we need to clean our data first?

To help identify and prioritize the most lucrative opportunities, Datascope facilitated a two-day workshop to develop a number of ways that Oracle could streamline its service request pipeline, from making recommendations for how those engineers might more effectively collaborate to quantifying the difficulty of incoming service requests. Above all else, the most promising first step was clearly the opportunity to automate—insofar as it was possible—the thousands of service requests that Oracle responds to on a weekly basis. Reducing the cognitive burden on engineers for handling the mundane service requests so they can focus on the more difficult challenges was clearly an area that was ripe for improvement.
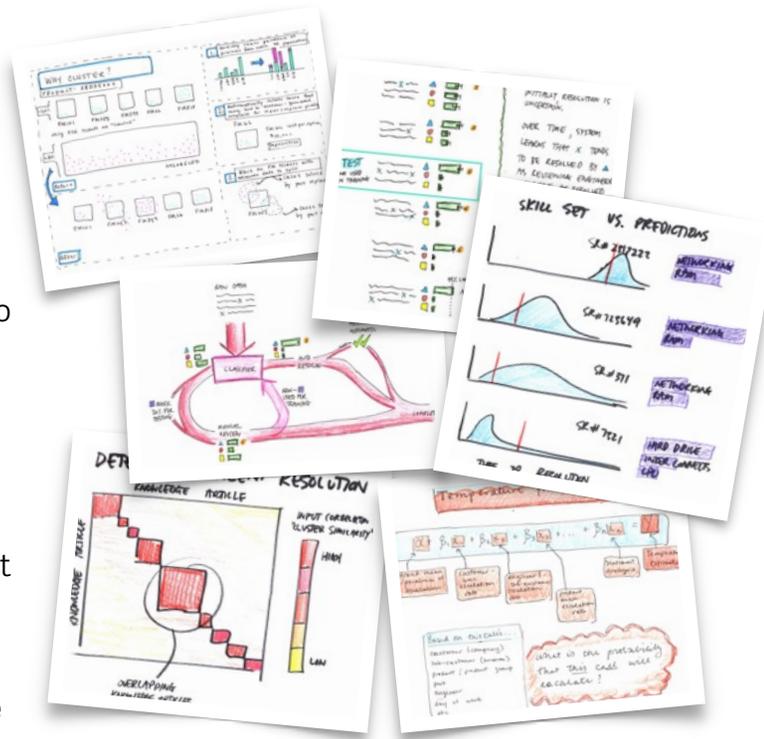
Above: some of the many concept sketches produced during the workshop

From ideas to machine learning prototypes

Coming out of the two-day workshop, Oracle and Datascope rapidly iterated on a prototype system that could correctly predict resolutions to service requests. In just a few weeks, Datascope built a prototype classifier using various open source packages that took data from Oracle's service request pipeline and predicted the type of part that needed to

be replaced. As Datascope and Oracle continued to iterate on the classifier, Datascope trained Oracle about how to use the different algorithms, how to test which ones were the most effective and, most importantly, how to diagnose unexpected outcomes that arose along the way.

"While Datascope deliberately led us away from cleaning our data at the outset, their iterative approach to developing our service request classifier quickly identified strengths and weaknesses in how our data and corresponding algorithms were being selected," describes Matt Maddox, Big Data engineer at Oracle. "By working side-by-side with Datascope, we were able to learn the tricks of the trade so that we could continue developing the classifier as we rolled it into our production environment."

Interfacing humans and machines

With the technical solution in place, Datascope next turned to the tricky task of informing various stakeholders about the predictive resolution engine's

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recommendations. During this phase, Datascope brainstormed a wide variety of concepts to visualize and explain the results that could fit within their existing workflow that included exploratory to descriptive interfaces. Additionally, Datascope developed a feature extractor to identify the key components the algorithms used to determine the

predictions which helped explain the results and facilitate stakeholder acceptance. By the end of this phase, Datascope and Oracle identified the most promising interface that could then be built by the Oracle engineering team to best convey the results to the end users in a meaningful and efficient manner.

"Datascope showed us how to efficiently explore ideas and worked with us to think creatively about how the results could be incorporated into existing workflows," said Sue Evanoff, Project Manager at Oracle. "Their techniques sketching concepts and then soliciting feedback before writing a line of code was far more useful than our usual 'list of requirements' approach".

Self-sufficiency: the ultimate compliment

While building this tool was an important component of this project, the ultimate goal of this project was to help Oracle build internal capabilities so that they could sustain their own predictive resolution initiative going forward. "As I describe our Big Data project, the collaboration with Datascope has been a

critical piece of our success. They helped fill in the gaps in our team and accelerate innovation, training us to be self-sufficient along the way. I look forward to our continued partnership," said Sue Zwinger, VP & GM of Global Systems Support, Innovation & Technology Office at Oracle. **d**

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