

THE SECRET SUPERPOWER OF DATA DASHBOARDS

The San Diego Sheriff's Department ECC is upgrading performance by tracking response in real time.

By Stephen Martini

After a neighboring agency garnered media scrutiny over its slowness to answer a 9-1-1 call involving a child attacked by a dog, which eventually ended in the child's death, the San Diego County Sheriff's Department (SDSD) wanted to know if there was a better way to evaluate 9-1-1 performance. They set out to become a performance-driven agency. It was a journey leading them to develop their own data analytics dashboard to react in near real-time to an issue.

Two members of the SDSD are engaging in data analytics using Microsoft's Power BI (Business Intelligence) Data Visualization platform. Power BI is a unified, scalable platform for self-service and enterprise business intelligence. In short, it is a one-stop shop to view all data in a single location. Data analytics tools allow you to leverage

real-time data from various sources to help make data-informed decisions. Imagine a dashboard pulling historical data from the weather service and your phone system then analyzing that data to notify you that thunderstorms increase your call volume by 40%. Emergency communications center (ECC) leadership could use predictive analysis to

staff up during specific hours when rough weather is forecast.

Before seeking a data analytics tool, management used Excel files for a few years and submitted weekly call-handling performance reports to county administrators. However, these reports didn't provide the necessary information to supervisors on shift in a timely enough manner to make real-time adjustments to improve performance.

SDSD Chief Information Officer Ashish Kakkad said, "We've always sort of looked at our communication center operations with the idea that we can do a better job leveraging the data we already have, not only from our response and our ability to better serve the community but also from our own internal operations perspective.



Specifically, our ability to have a better view into how the center’s performing and how to use that information to potentially look at staffing and recruiting.”

Identifying the data sources to feed your data analytics tool is vital. “We pulled Excel spreadsheets from ECaTS (Intrado’s Emergency Call Tracking System) on a regular basis,” Kakkad said.

They started by reaching out to Intrado to obtain an application programming interface (API) to access a real-time view of their data.

“That set us down this path of starting to understand what our data means, what it tells us and what we can do to operationalize it — not only from day-to-day operations but also from a long-term strategic operations perspective,” Kakkad said.

The process took about seven months from concept to creating their first few reports. Since then, the team added a computer aided dispatch (CAD) API; source data from a SQL database of existing employee hire, training certification and resignation dates; and an Excel file on a SharePoint site sourcing applicant data. In the future, they seek to add interfaces to online scheduling and call handling solutions to determine trends behind employees’ attendance or readiness to answer a call.

SDSD engaged the talents of 18-year veteran and Supervising Emergency Services Dispatcher Matthew Oelshlagel to configure the Power BI solution, fed with an API from ECaTS, an online reporting service, that sought to answer questions Oelshlagel has been asking for years.

Where are the operational inefficiencies? How can I improve things? How can I streamline or automate the process so I don’t have to manually do these things, then put my attention toward these other things that could be improved or need some focus? Where should we assign dispatchers? How do I need to adjust schedules? When we convert new hires to newly signed off trainees, where do

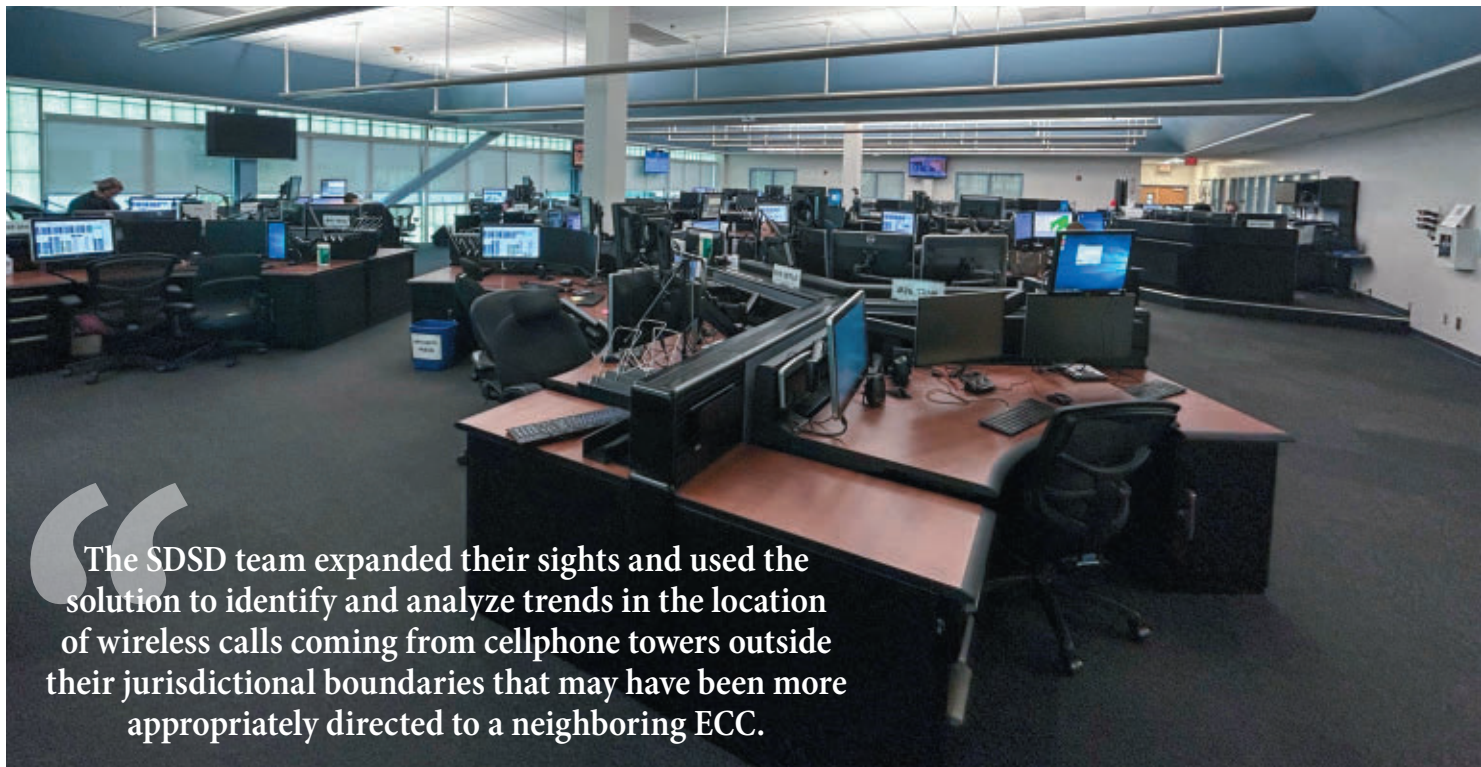
“The San Diego Sheriff’s Department wanted something with visual appeal that was easy to follow, providing a group of reports users wanted to use regularly.”

we plug them in to make the most progress toward lightening our workload?

He wanted something with visual appeal that was easy to follow, providing a group of reports users wanted to use regularly. Oelshlagel started by creating a main landing page providing trends leadership was concerned with, such as average hold times for emergency calls and non-emergency calls. The reports he created showed whether the ECC was experiencing an increase or decrease in the amount of time callers were waiting for public safety telecommunicators to answer non-emergency calls.

“Solely looking at Excel sheets, you can’t extract a reason this is happening,” he said. “You can identify there is an issue to address — there is a problem where our performance is decreasing when it comes to average hold time in a particular week or month. But now, we can use Power BI to compare performance to prior years and start identifying a trend. If we experienced similar call volumes or staffing levels in 2018, we could start determining causation.”

They then expanded their focus to compliance with the California call answering standard that aligns with National Fire Protection Association Standard 1225,



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Chapter 15, measuring the percentage of 9-1-1 calls answered within 15 seconds.

“We could track that data — see it dropping steadily since 2018. But why?” Oelshlagel asked. “With any of these visuals, if the user wants to get more information, they can go drill down in this hierarchy; they could see individual years, individual months, individual days, individual shifts and individual dispatchers in an effort to drill all the way down to a trend in causation.”

He created a rolling analysis of trends across several months — from 30 to 120 days — that allowed report viewers the tool to quickly analyze how performance suffered due to specific call surges or staffing shortages. Reports are, at the latest, 12-15 minutes old, which means leaders have real-time data to take quick action.

“I wanted data I could act on, and I wanted that for my partners as well. They can drill down into it and identify surges in calls causing a failure of compliance to the standard, such as a brush fire causing a spike in call volume for an hour,” Oelshlagel explained. “This clarity helps answer questions like ‘Did we have enough staff that day — that hour — when we were not compliant?’ Maybe it was a cellphone that called 9-1-1 16 times in an hour — a phone in a pocket or something. Obviously, not everything that we can see is

a problem we can fix in the moment, but it at least provides a tool to identify that problem while it is current news.”

The SDSA team expanded their sights and used the solution to identify and analyze trends in the location of wireless calls coming from cellphone towers outside their jurisdictional boundaries that may have been more appropriately directed to a neighboring ECC. They also identified trends in the quantity and location of wireless calls presenting initially as WRLS Phase 1 calls — without a device location — and their associated carriers so they could work to improve location accuracy delivered on every wireless call on the first ring.

Specific to staffing, Oelshlagel obtained access to the county’s applicant database and started compiling data into reports to identify challenges in getting applicants through the application process, finding the bottlenecks and any issues they could address.

“Up until this point, our assessments were kind of just anecdotal, like ‘Well, I think that we don’t have control over the background process’ or ‘We’ve got X number of people in the background process, which is creating the issue,’” he said. “Without some insights into the data behind the reasons why, we can only make assumptions. Having this data allowed us to make some informed decisions and

point out some areas with certainty, saying we need to make improvements in this area.”

They used data analytics to assess where trainees should be placed once they were released from training and assigned to work independently on shifts based on the workload’s greatest need.

Beyond daily operations, Oelshlagel determined that team members who stayed longer than two years remained employed with the agency for an average of 11 years; 61% of team members who left in the past 10 years had worked at the agency for less than 2 years.

“I think this is pretty telling,” he said. “This is useful because it helps us to recognize we need to do everything we can to get people through training and get them to stay by some means because this is the value they bring us versus somebody that leaves within two years. If I know if I keep them longer than two years, I can keep them an average of nearly 12 years of service. What a benefit to my department, my county and the public that we serve.”

Kakkad stated that while Power BI is the solution used in San Diego, “it’s just who we’re using because that’s how we’ve set up our organization. Access to any API can enable an organization to use whatever tooling or tools they have access to or are kind

of familiar with. If your organization uses Tableau or Amazon Web Services or any of the other tooling that's available, as long as you have access to that API piece, you can do these things."

Initially, one of the challenges in creating reports was having too many technical staff in development and not understanding how to interpret the data from an operational perspective. Oelshlagal stressed the importance of allowing operational team members to drive the conversation to function more efficiently.

However, they are confident implementing a data analysis dashboard solves several problems.

"The analysis, as a whole, is a help to justify a change in how we're handling non-emergency calls. First and foremost, the problem is being noticed," Oelshlagal said. "We can say we have high turnover, and we can complain about stats suffering due to vacancies. But you don't have to trust me — I can show it to you in an easy-to-digest visual.

"If we hired eight last year and lost 32 last year, it sounds like a problem, but when

we can show this on a visual compared to phone stats and how long it takes to recover for that, we can contrast how one affects the other. We can also conduct analysis to help solve the problem (e.g., assigning personnel at the right time), which is accessible at the supervisor level." ●

Stephen Martini, RPL, CPE, is APCO First Vice President and Director, Metro Nashville (Tennessee) Department of Emergency Communications. He can be reached at Stephen.Martini@nashville.gov.

CDE EXAM #67606

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| <ol style="list-style-type: none"> 1. Which of the following are providers of data analysis tools? <ol style="list-style-type: none"> a. Microsoft Power BI b. Amazon Web Services c. Tableau d. All of the above 2. Data analytics tools allow you to leverage real-time data from various data sources to help you make data-informed decisions. <ol style="list-style-type: none"> a. True b. False 3. Without a data analytics tool, leaders at the San Diego County Sheriff's Office spent a lot of time analyzing ----- <ol style="list-style-type: none"> a. Opinions b. Neighboring agency data c. Excel sheets d. All of the above 4. How long did San Diego County Sheriff's Office take to develop the concept to the first dashboard report? <ol style="list-style-type: none"> a. 30 days b. 60 days c. 7 months d. 12 months | <ol style="list-style-type: none"> 5. National Fire Protection Association (NFPA) 1225 Chapter 15 requires 9-1-1 calls to be answered within ___ seconds? <ol style="list-style-type: none"> a. 5 seconds b. 10 seconds c. 15 seconds d. 20 seconds 6. How old are the oldest 'real-time' data reports being used at SDSCO? <ol style="list-style-type: none"> a. 12-15 minutes b. 12-15 seconds c. 15-30 minutes d. 15-30 seconds 7. Other than personnel performance, what else did SDSCO measure with their data analytics tool? <ol style="list-style-type: none"> a. WRLS Phase 1 calls received b. Location of wireless calls received outside the jurisdiction c. Average tenure of trainees who work longer than 2 years d. All of the above | <ol style="list-style-type: none"> 8. SDSCO pulled data from which of the following sources? <ol style="list-style-type: none"> a. ECATS b. A SQL database showing existing personnel hire/certification/resignation dates c. An Excel sheet hosted on SharePoint tracking applicants d. All of the above 9. Whose voice is critical when configuring a data analytics tool? <ol style="list-style-type: none"> a. Operations professionals b. Software developers c. Legal advisers d. All of the Above 10. Data analysis tools can provide the evidence an agency needs to support a change in process, policy or procurement. <ol style="list-style-type: none"> a. True b. False |
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