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**Internal audit analytics:  
The journey to 2020**  
Insights-driven auditing

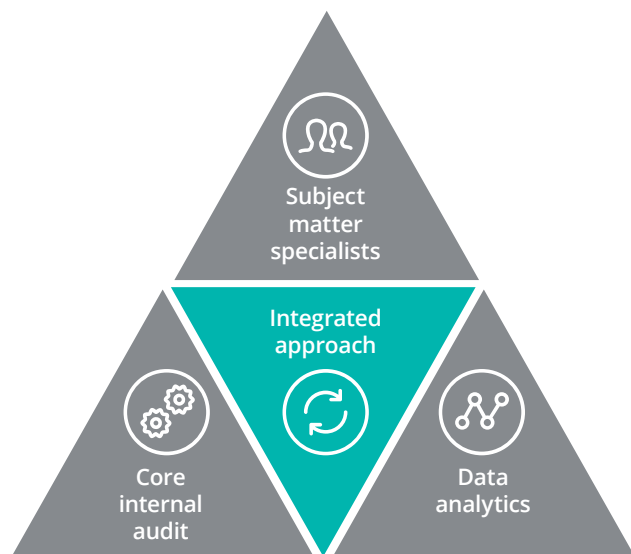
By capitalizing on the wealth of data now available—from your own business activities as well as external sources—internal audit (IA) can generate valuable new insights, provide greater assurance, and rewrite the rulebook on traditional auditing techniques.

“Analyzing data is important!” is an understatement given the deluge of big data and where traditional notions of testing are anachronistic to providing assurance. With new opportunities and risks around every corner, making the right decision at the right time has never been more important. By embedding analytics in every phase of the audit process, IA can help the business navigate a world that has become vastly more volatile, uncertain, and complex. We call this new approach to embedding analytics “insights-driven auditing.”

### Setting the vision for internal audit analytics

There are a multitude of options to consider when developing analytical capabilities and delivering analytics-enabled audits: How and where to host the capabilities and solutions? What is the right technology to deploy and when? Who are our ideal resources to drive the efforts? And how does this affect the internal audit process and communication of results? These decisions will impact not just how you audit, but what and when you audit.

**Figure 1: Enhanced audit integration model**



They will inform technology and talent decisions as well as how IA interacts with the business. Understanding what is core to the mission and objectives of IA, as well as the expectations of your key stakeholders, is essential to guiding these decisions. Fundamentally, we believe analytics is about delivering business insight and enhancing the way we audit.

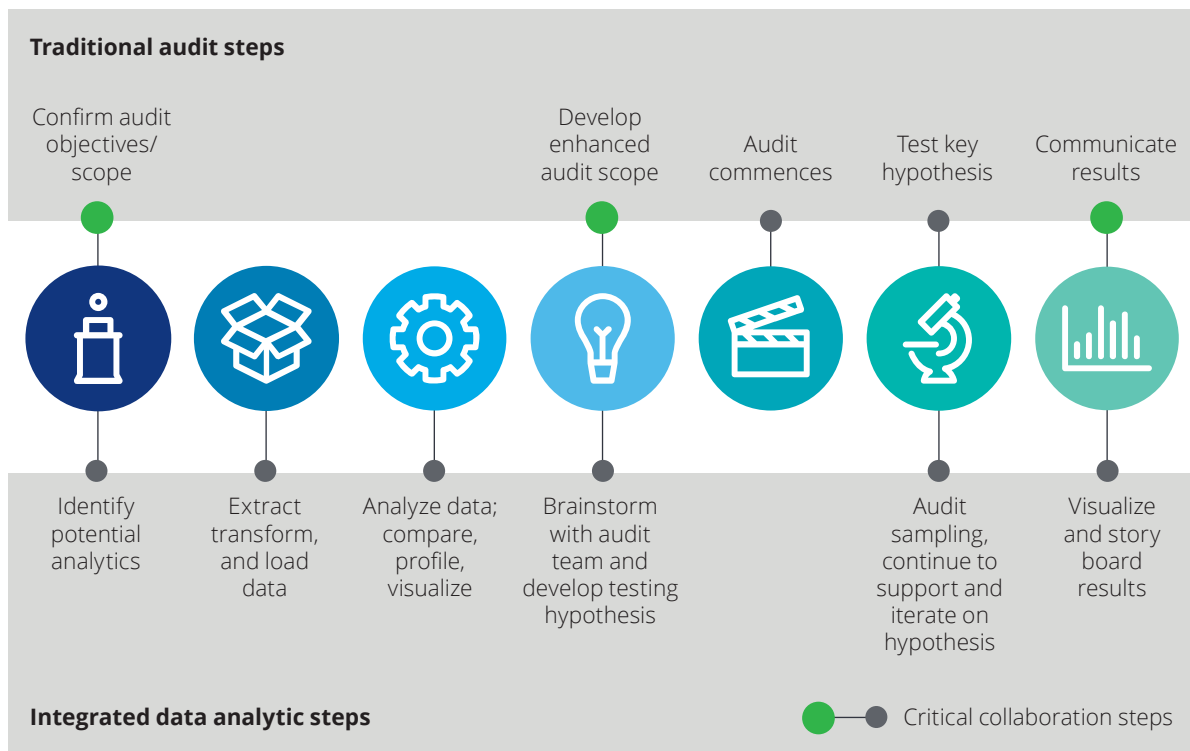
### Delivering the strength of a multidisciplinary, insights-driven audit approach

Analytics is more effective when delivered as an integrated team. This means your core IA professionals are working together with the data science and analytics professionals and calling on subject matter specialists as appropriate (see figure 1). By co-developing scope, risk objectives, and approach for the internal audit and jointly participating in walk-throughs, internal auditors significantly enhance effectiveness of the analytics. In addition, a shared understanding of the process and outcomes ultimately results in an audit with a greater impact on the business.

The success of any analytics-embedded internal audit is linked to those demonstrable results that can transform your organization, particularly when they translate to financial benefits. When seeking insight from data, it is important to ask the right questions and to always challenge yourself with “so what?” for any insight produced. Linking questions to key testing hypotheses—or “what could go wrong?”—can help drive the analytics approach. Hypothesis development needs to happen prior to scoping your audit to deliver the greatest benefit. Analytics as a “bolt-on” to the audit (i.e., during fieldwork alone) drives incremental rather than transformational benefit. Figure 2 illustrates the insights-driven audit approach.

## Refreshing the audit approach: Embedding analytics

Figure 2: Enhanced insights-driven audit methodology



### Benefits of an insights driven world

We have seen many successes and believe the benefits of an insights-driven audit can be summarized into four simple statements:

**Perform the same audit faster.** For example, improving your access to data and developing key insights before fieldwork commences; making connections and comparing performance and key benchmarks between products, processes, and business units means you focus only on what is of utmost importance and avoid merely confirming the obvious; or assessing transaction risks in real time.

**Perform the same audit cheaper.** For example, connecting the auditor directly to the process through the data with risk analytics and data visualization allows exploratory analytics to drive a more focused audit, while still testing 100% of the population. Moving to automated routines over manual saves time and money.

**Perform better audits.** For example, combining data from inside and outside your organization to add new richness and granularity to insights and understanding of risk. Benchmarks, comparative analysis, and trending enhance on-the-job learning and development while delivering a more impactful result to business stakeholders.

**Make innovation a centerpiece.** For example, providing a rich combination of data science disciplines and using a new generation of technologies to enhance, automate, and continuously improve the audit process, reporting, and service delivery.

### What does success look like?

To deliver effective analytical insight as an everyday part of the internal audit process means IA must broaden its focus beyond data and technology. The goal is to develop cost-effective solutions that are targeted, underpin the internal audit process, and achieve a more efficient and effective audit delivery model.

## Becoming an analytics-enabled function

For many IA leaders, knowing where to start on their analytics journey is one of the tougher decisions they'll have to make. It will begin with an owner who sets out a vision and who remains ultimately accountable for decision making at every stage; a strategy in the form of a roadmap, which describes and sets out the vision and objectives two to three years in the future; and an agreed set of processes that take into account everything from the order and priority of key tasks, including technology- and human resources-related decisions, to the steps required to identify, map, and extract data for use in your first analytic embedded audit.

If a key element is missing, the vision will likely not be met. And your brand, along with the business, could be damaged. To overcome this, we recommend a simple three-stage approach:

1. **Assessment.** Analyze current analytics capabilities both within IA and across the business and rapidly develop proof of concepts to identify challenges and opportunities.
2. **Roadmap.** Create a long-term strategy and vision for analytics; scope and prioritize projects to achieve this.
3. **Deliver and monitor.** Initiate the program, deliver the roadmap, and monitor your implementation successes against key performance indicators.

Becoming analytics-enabled relies on the fundamental building blocks of people, process, data, and technology, all being informed by an analytics strategy. This enables the embedding of analytics into the audit lifecycle, focusing on the right risks at the right time while aligning analytics to the IA strategy and value drivers of the business. The questions below can help form the basis of your current state assessment and implementation roadmap.



**Analytics strategy.** In order to implement or enhance their analytic capabilities, IA leaders first need to develop an upfront vision of the IA future state, define objectives for the proposed initiative(s), and set the overall strategic direction for the function. Along the way, they should ask themselves:

- What do we want the department to look like two to three years from now?
- How can we use analytics to be more strategic?
- Does executive leadership understand the importance and benefits of embedding analytics into the IA function?



**Process.** Shifting from a “checklist” or sample approach to insight-driven decision making requires a sustainable process framework that staff can follow, regardless of attrition or other changes. Some questions to consider in building this framework include:

- When is the right time to identify analytics projects and on which are the best projects to focus our efforts?
- What are the steps we need to take to ensure that these projects are a success?
- How will analytics change the approach of our current audits and what is the impact of this change?
- What are the steps we should be taking to extract and load data timely?
- How will we measure our progress and capture lessons learned?



**Technology.** Insights-driven auditing relies on analytics technologies to enable new ways of gathering, analyzing and presenting data.

Accordingly, many believe that technology should come first when building a sustainable analytics function. However, in our view, it should come last. The overall strategy for the analytics function, along with the vision of its future state, should drive technology selection and deployment. With this in mind, IA leaders should consider:

- What technologies do we need not only to process the data but also to present the results in a meaningful way?
- Are these technologies already licensed by the business?
- Are these tools scalable and are they capable of supporting our long-term vision?
- How can we most effectively collaborate with IT?
- What kind of technical support is available?
- How will we document and map the data landscape to support our long-term vision?



**Data.** Through analytics, IA leaders can harness vast amounts of data with greater accuracy and efficiency. It also helps IA leaders to understand and identify potential risks and opportunities farther into the future. Questions to consider include:

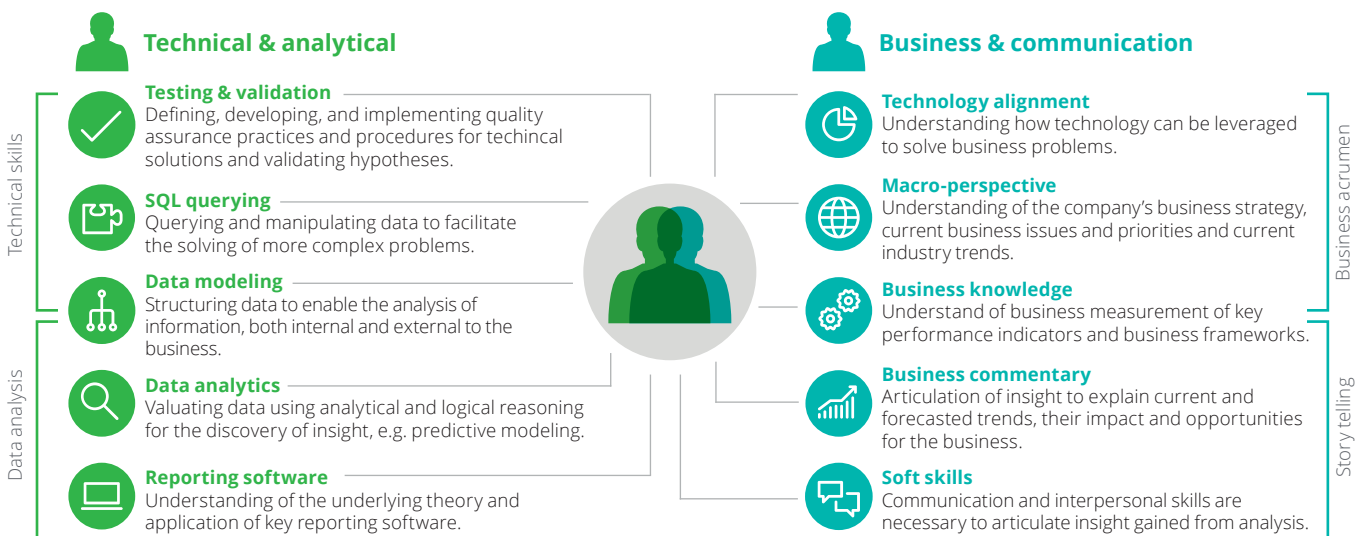
- What data do we need to answer the important questions?
- From where is it sourced (i.e., internal, external, licensed, open, etc.)?
- How do we bring it together and what are the challenges in transforming, linking and publishing it?
- What about quality and accuracy?



**People.** IA leaders will need to think through the human resources aspects of delivering insights-driven audits, including roles and responsibilities, skill sets, staffing needs, competency models, and training requirements. Questions to consider include:

- Who is the accountable IA owner?
- What organizational structure do we need to put in place to support our analytics strategy?
- Do we need new skill sets, such as statistical know-how, data-management expertise, and visualization and presentation skills? (see figure 3)
- Who do we need to engage in other departments as well as our own?
- How will we train our staff?

**Figure 3: Data analytics competency model**



### Getting started

A proof of concept can serve as a feasibility study to provide a current state assessment of the organization's analytics capabilities and the strength of the insights that can be produced. To begin, the IA team would identify key business issues or important question facing their department. We call this process "hypothesis development." The IA team can use the proof of concept to share visible, tangible insights with their business stakeholders and get to the heart of the issue.

### Plan around roadblocks

Leveraging advanced analytics for internal audit can result in significant cost savings across an organization; however, many IA teams are not garnering the efficiencies afforded by using data analytics. While many audit teams use analytics techniques in their fieldwork, a minority leverage the more advanced and vastly more valuable procedures during risk assessment and audit scoping. This suggests something is holding them back, and cultural change is a likely culprit. One of the most formidable obstacles in building a sustainable analytics capability for IA is changing the traditionalist mindset. Forward planning is essential and often requires a rethink of the audit methodology and approach to allow for analytics (see figure 2).

Pick battles big enough to matter, small enough to win

— Jonathan Kozol

### The path forward

While traditional IA functions may leverage analytics to select samples, extrapolate results, or identify exceptions, insights-driven auditing goes beyond this basic process in order to better address business issues and risks and provide new and valuable insights to management. It can help IA professionals ask the right questions, improve confidence in audit results, and identify the most appropriate actions.

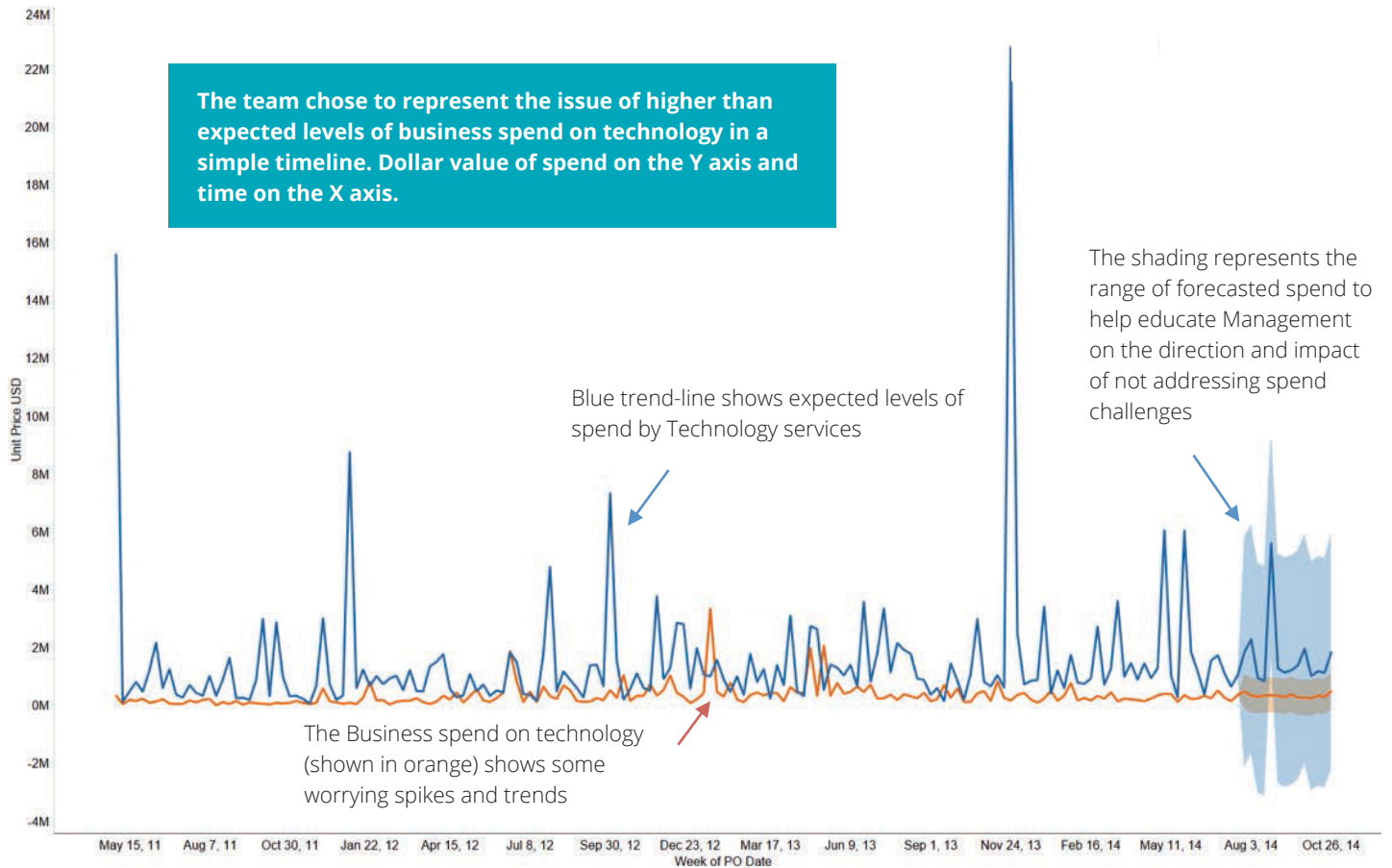
While few organizations are on the cutting edge right now, our experience suggests that Insights-driven auditing will become pervasive among leading companies by 2020. Soon, effective IA departments will integrate analytics as a core capability across their function and throughout the audit lifecycle. By acting now, IA leaders can get ahead of this trend, generating valuable new insights and more effectively help their business to navigate the future.

## Analytics in action: A use-case on IT cost containment

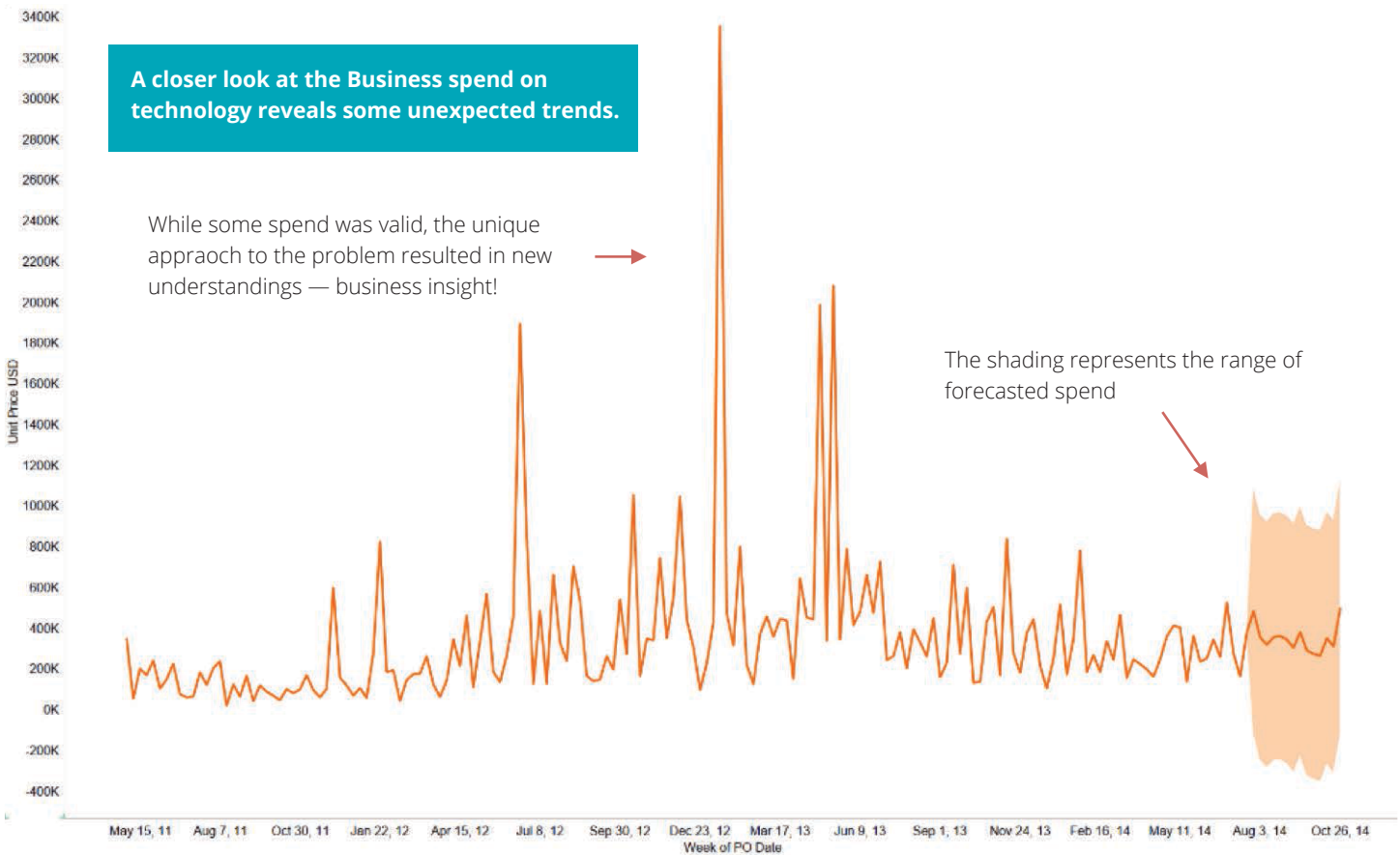
When the CIO of a leading company wanted to know if the business was effectively controlling its technology spend, he asked the IA organization to audit the company's technology purchases. Since the IT organization relied on strategic partnerships with a few key vendors to supply its hardware, it seemed that it would be difficult for employees to go outside the appropriate procurement channels. Using individual purchase orders as the audit sample, the IA team decided to take an insights-driven approach enabled by analytics. The analysis, which drew upon multiple internal and external sources of data in addition to the purchase orders, revealed that something was indeed awry.

Leveraging the visual capabilities of the analytics application, the IA team produced a graph (see figure 4) to illustrate that, contrary to expectation, the business was going outside IT to make purchases. Furthermore, some business buyers were overpaying by as much as 300 percent. The orange line in the graph represents business spending on IT equipment and the blue line represents what IT had purchased. The disparity between the two lines was an eye-opening revelation for the CIO who expected the orange line to be flat.

**Figure 4: Business and technology service spend on technology**



**Figure 5: A closer look at the business's spend**



A closer look at the business spend on IT shows some dramatic spikes in dollar volume – not the anticipated negligible spend or flat line. (see figure 5)

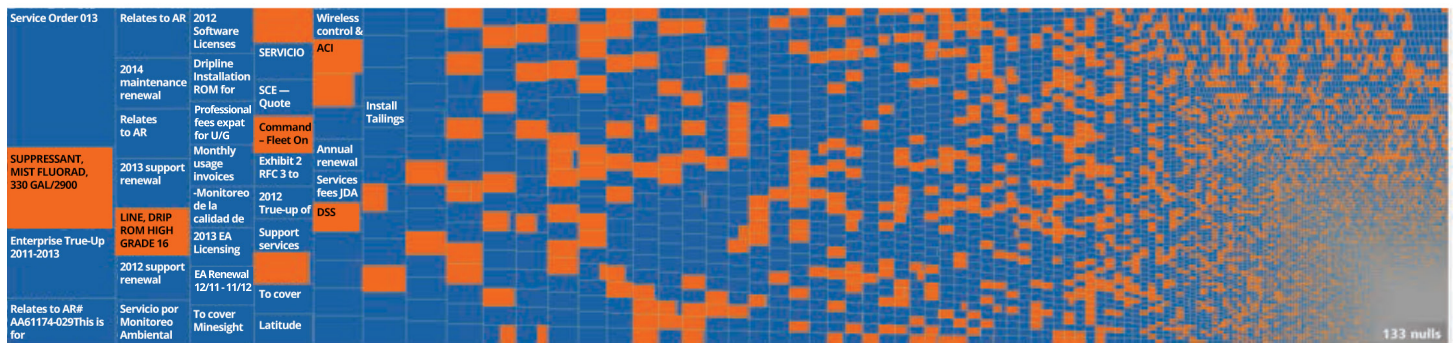
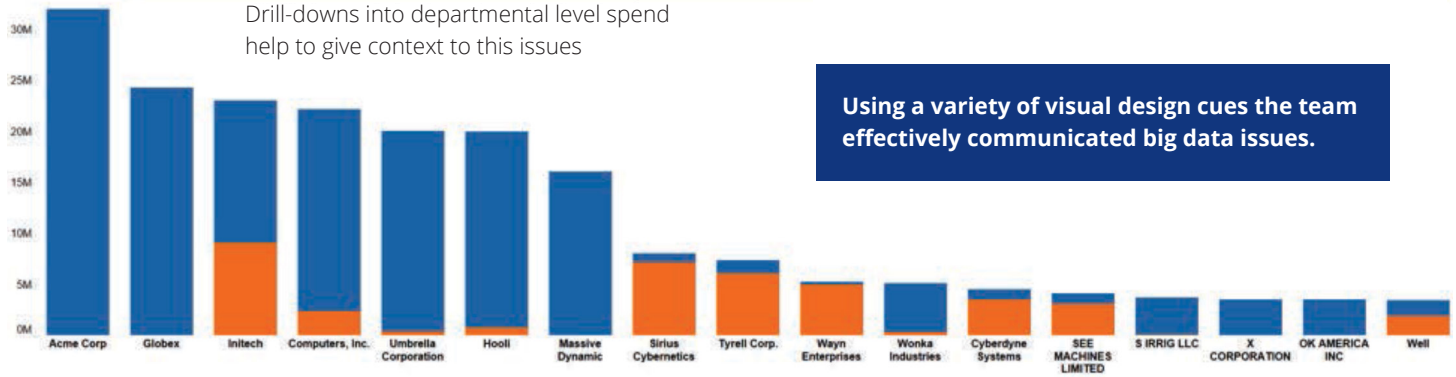
The audit team drilled further down into the data, shedding greater light on the nature and extent of the spending variance. To do this, they asked more specific questions, such as which departments are spending more on technology and why? A “treemap” (see figure 6) allowed the team to depict the answers with a surprising degree of granularity by illustrating every purchase as a box, with the size of the box representing the relative dollar spend. This set the stage for the IA team to pursue an even deeper line of “what if” and root-cause questioning. For instance, how much would each department have saved if it had purchased its IT equipment by going through proper channels? What was motivating business buyers to bypass IT? What benefits did they think they could gain this way? And how were they able to circumvent the procurement controls, which were thought to be effective?

As is often the case, analytics allowed the IA team to go beyond the standard checklist approach, empowering them to respond more dynamically to the business insights being revealed. Through this process, IA ultimately recommended ways to improve oversight and rationalize IT spending—actions that are expected to result in significant savings.

Figure 6: Delivering the message through visual cues

| Area of IT Spend | Engineering | Environmental | Legal  | Supply Chain | F&A     | HR      | Corporate | Contracts | Site Ops  | IT         |
|------------------|-------------|---------------|--------|--------------|---------|---------|-----------|-----------|-----------|------------|
| Hardware         | 444         | 21,648        | 24,664 | 64,136       | 409,597 | 501,298 | 1,367,023 | 3,530,506 | 6,781,909 | 16,557,177 |
| Software         | 14,664      | 2,906         | 150    | 121,535      | 93,602  | 161,354 | 736,216   | 430,216   | 2,819,822 | 10,865,129 |

Drill-downs into departmental level spend help to give context to this issues



The treemap helps to highlight that troubling spending patterns are systemic throughout the organization



See where a new approach to internal audit can take you.  
See where insights lead.

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