



THE INTERSECTION OF  
**BIG DATA,**  
DATA GOVERNANCE  
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THE INTERSECTION OF  
**BIG DATA,  
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# SECTION 1: INTRODUCTION

## BIG DATA: SHIFTING FROM BUZZWORD TO REALITY

BY DANIEL TEACHEY, MANAGING EDITOR, SAS

For (oh so many) years, we've been hearing about the "promise" of big data. Much of the buzz focused on getting people prepared for the onslaught of bigger data sets – and what IT needed to do to help the business make sense of this information.

Now? It looks like the conversation is shifting. It's now a given that bigger, more complex and more diverse data can help an organization drive things forward. Organizations often view big data as an inevitability. Amplifying this, we're starting to hear from early adopters who have experienced success by integrating big data into their existing IT framework.

Yes, bigger data is starting to become the norm. And that's changing the discussions that we're having around the topic. And the questions are no longer about "why." It's about "how" and "when."

As big data shifts away from a more theoretical concept (only adopted by those on the leading edge), the fun can really begin. How do you prepare for more information than you've ever collected before? How can you manage this information with the same standards you applied in the past? These are questions that are causing both IT and business sides to start actively preparing for – and implementing – big data.

More importantly, for those tasked with managing information, increased adoption of big data technology is changing the way that organizations deploy and expand their efforts for data quality, data integration, data governance and master data management (MDM). That is causing some interesting changes in organizations, both big and small, including:

- Adding a new C-level executive – the *chief data officer* – to the management suite.
- Calibrating existing data governance efforts to manage more data than before.
- Understanding what data management principles are necessary for managing device- or sensor-generated data in the Internet of Things.

In this e-book, we will examine these issues and many more. There are blogs outlining some of the more forward-thinking aspects of big data as well as in-depth papers and videos to provide guidance on how to align your data management program for a big data world. Enjoy the read! ■

# SECTION 2: INDUSTRY NEWS

## BRINGING DATA TO THE C-LEVEL

BY JULIE LANGENKAMP | INFORMATION MANAGEMENT | SEPTEMBER 25, 2014

*In an interview with Information-Management.com, Jill Dyche, Vice President of Thought Leadership at SAS, discusses the trends that are elevating the data discussion and forcing the executive suite to become involved in data strategy.*

*NOTE: This summit occurred in October 2014.*

**Your recent focus on the role of the chief data officer and the approach for establishing a data strategy and chief data office is the foundation of your keynote at the October 2014 MDM and Data Governance Summit in New York. Would you give us a preview of your presentation?**

[The keynote has] a clever title – “Data at C-Level.” It’s about the chief data officer in the new era of IT, and I’m going to leverage three models: CDO Light, CDO Medium and CDO Bold. But I’m going to play off of those not just in terms of the chief data officer, but the new awareness of data among other C-level executives. Because beyond marketing a lot of executives have a new attention focused around data for their own particular purposes, and so what do they do, what do they delegate and what do they partner on [to execute a data strategy]. I think one of the forces behind

the rise of the chief data officer is a lot of these executives, like the CFO and the chief marketing officer, don’t necessarily want to run the governance or want to run the enterprise infrastructure that enables data sharing. What I’ll talk about at the Summit is the engagement across the C-suite when it comes to information as a business enabler and what they need to keep and what they need to shed in terms of data responsibilities.

**Do you think that will be a difficult message for people to hear, or do you think they’re prepared to begin thinking with that mindset?**

I think a lot of executives will be ready. And I think this is validating for a SourceMedia audience because I think they have watched the increased efforts of line-of-business people or even line-of-business IT organizations to incorporate data responsibilities, only to have underestimated their complexities. So they said, “Oh, yeah, we’ll do that. It’s our data, we own it anyway. Whoa – you mean we have to match customers in order to identify them and that requires technology investment? And you mean data modeling still matters? And there needs to be a semantic layer? We

## SECTION 2: INDUSTRY NEWS (CONTINUED)

didn't bargain for all that. Here, take it back." So I think there's some sort of a meeting place in the middle there and a lot of those decisions need to be driven not by the people who are actually managing the data, but by the people who are running the business organizations that consume the data.

**The attendees at the Summit understand the value of MDM and data governance. But as you've mentioned, not every organization is ready for a chief data office and chief data officer. How do you gently tell someone they may not be ready for this and yet they need a big-picture data strategy?**

I think the way you convince them is to emphasize the importance of evolving toward the role and abandoning the intention to appoint somebody. In other words, make sure your technology portfolio around data management is robust. Make sure the processes for reconciling and cleansing and correcting and annotating the data exist. And then lift your head, because then you'll be in a much clearer space to decide whether somebody needs to be the figurehead above all that or not. I think that one of the big things that we see with a lot of our customers is that as executives start to discuss this, they're not even aware of what some of those incumbent capabilities are and they assume that those have to be built from scratch. I think it's validating for some of these businesspeople who attend the Summit as well as some of the data people who attend; it's the "Hey, we're here. We've been doing this, we know this space, and we can actually broaden those

capabilities in order to support a more robust function around true information management."

**Are there industry trends evolving or coming to fruition that are pushing the data discussion and the need for a data strategy?**

There are many, but two that come to the forefront. First the trend of various vertical industries having their own market forces that are forcing the data conversation. In health care it's things like meaningful use, ICD-10 and Obamacare, where data needs to be at the forefront of compliance. In banking there are new regulations in North America around CCAR, which is the government mandate for data auditability, so that's forcing the data conversation at the C-level. So there are specific forces across industries that are inviting this conversation.

I think from a horizontal perspective we're seeing a realization that there are pockets of data management across the organization that executives recognize the potential for consolidating in order to achieve not only economies of scale and cost savings but also productivity. Consider the traditional example of every line of business has its own data quality tool. I think executives are starting to recognize that's a symptom of a larger problem, which is pockets of competence across organizations in their companies where data may be managed differently. So bringing that together is a huge opportunity, and one that because of the other reasons I mentioned executives are newly paying attention to. ■

## SECTION 2: INDUSTRY NEWS (CONTINUED)

# MASTER DATA MANAGEMENT AND THE INTERNET OF THINGS

BY ALEX BAKER | INFORMATION MANAGEMENT | JULY 7, 2014

**Despite the IoT boom, many businesses remain unsure of how this information can be collected, analyzed, and incorporated into existing systems.**

The Internet of Things (IoT) is exploding in popularity as companies look to take advantage of new ways to use device- and sensor-generated data to create new digital business models or to augment existing systems and processes. Despite the novelty, however, many businesses remain unsure of how this information can be collected, analyzed, and incorporated into existing systems. In Saugatuck's<sup>1</sup> most recent Digital Business survey, 41 percent of respondents indicated that they were either very or extremely committed to taking advantage of IoT, and 47 percent indicated that they were using sensor technologies to enhance the delivery of digital products and services. (1390SSR, 2014 Enterprise Intelligence Survey: Digital Business & Hybrid Cloud, June 20, 2014)

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<sup>1</sup>Saugatuck Technology provides subscription research/advisory and strategy consulting services to senior business and IT executives, technology and software vendors, business/IT services providers, and investors.

Much of this early success with the Internet of Things comes from the low-hanging fruit around mobile device sensors such as GPS or machine generated data in the form of log files. While there is high expected value from many sensor data sources, at present only 34 percent of our survey respondents expected sensor data to be a medium-to-high enabler of business innovation. This is likely due to the difficulty in setting up new instrumentation, gaining access to existing sensor networks that exist within the organization (which are frequently encapsulated within process control systems), and finally in the challenges of managing and using that data once it has been captured.

### WHY IS IT HAPPENING?

The Internet of Things is part of a larger trend around big data that seeks to use information generated in machines, mobile devices, and sensor networks to generate business value, improve efficiency, or aid decision making. Unlike other areas of big data that focus on pre-existing data sets and data mining, most IoT initiatives focus on generating new data, or filling holes in existing data sets to make other information more valuable.

## SECTION 2: INDUSTRY NEWS (CONTINUED)

The context in which Internet of Things data is generated and used, then, becomes highly relevant to businesses expecting to gain value from these new capabilities. As a result it becomes increasingly important to be able to relate sensor data to other data sources across the enterprise, both as it is generated and when it is analyzed. (Alteryx Inspire – The Importance of Analytic Context, June 20, 2014). ■

[Click here to read the Market Impact, including three specific areas where we expect MDM to add value to Internet of Things initiatives.](#)

*Originally published on Saugatuck Lens360 July 2014; republished with permission on Information Management*

### CREATE THE DATA GOVERNANCE KILLER APP

BY MICHELE GOETZ | INFORMATION MANAGEMENT | OCTOBER 20, 2014

One of the biggest stumbling blocks is getting business resources to govern data. We've all heard it:

"I don't have time for this."

"Do you really need a full-time person?"

"That really isn't my job."

"Isn't that an IT thing?"

"Can we just get a tool or hire a service company to fix the data?"

Let's face it: Resources are the data governance killer even in the face of organizations trying to take on enterprise-led data governance efforts.

What we need to do is rethink the data governance bottlenecks and start with the guiding principle that data can only be governed when you have the right culture throughout the organization. The point being, you need accountability with those that actually know something about the data, how it is used, and who feels the most pain. That's not IT, that's not the data steward. It's the customer care representative, the sales executive, the claims processor, the assessor, the CFO, and we can go on. Not really the people you would normally include regularly in your data governance program. Heck, they are busy!

But, the path to sustainable effective data governance is data citizenship - where everyone is a data steward. So, we have to strike the right balance between automation, manual governance, and scale. This is even more important as our data and system ecosystems are exploding in size, sophistication, and speed. In the

## SECTION 2: INDUSTRY NEWS (CONTINUED)

world of MDM and data quality, vendors are looking specifically at how to get around these challenges.

### THERE ARE FIVE (5) AREAS OF INNOVATION:

- 1. Social governance** - infusing social capabilities into applications, analytic tools, mobile devices, etc. that allow users of the data to send in feedback, likes, dislikes, and sharing behavior to inform data governance policies and rule changes or data remediation.
- 2. Semantic MDM** - the ability to model master data in business terms rather than data systems structures that strip away context and meaning.
- 3. Analytical MDM** - the ability to use the MDM repository as an analytic data source and leverage visualization tools on top of the repository.

**4. Social style environment** - providing a look and feel in a data steward's workspace that is intuitive and application like to review and govern data rather than living in a data development environment.

**5. Intelligence MDM** - leveraging unsupervised artificial intelligence and machine learning to speed up and automate more of the manual data governance processes, reduce the need to manually create rules and quickly incorporate new data sources.

Ultimately, business users want access to the data to use the data. Why slow them down with data governance? Speed them up with these new capabilities and give them the tools and feedback channels to improve your data governance program's ability to keep up with changing ecosystems, data, and demands. ■

## SECTION 3: BLOGS

### THE DATA ROUNDTABLE: A COMMUNITY OF DATA MANAGEMENT EXPERTS

The [Data Roundtable](#) is a forum brought to you by SAS, where industry thought leaders come together to share the spotlight and discuss data management topics.

#### THE BIG DATA THEORY

BY JIM HARRIS | MARCH 5, 2014



In 1964, when American radio astronomers Arno Penzias and Robert Wilson were setting up a new radio telescope at AT&T Bell Labs, they decided to point it toward deep space where they expected a silent signal that could be used to calibrate their equipment. Instead

of silence, however, what they heard was a persistent noise, a seemingly meaningless background static that they initially mistook as an indication their telescope was faulty equipment in need of repair.

For almost a year, they functioned off this assumption. At one point, they pondered if the cause of the static might be the excessive amount of pigeon poop accumulating on their telescope. But even after spending a month meticulously cleaning it, when they pointed the telescope toward deep space, once again they heard the same persistent noise. (At which point, although it is not included in the official scientific record, I like to imagine that much stronger language than “poop” was uttered.)

However, after analyzing what they initially thought was the crappiest possible data produced by a broken telescope, they challenged their own assumptions. By doing so, they discovered what was data of the highest possible quality. It revealed, in a classic example of mistaking signal for noise, one of the greatest scientific breakthroughs of twentieth-century physics.

Arno Penzias and Robert Wilson won the 1978 Nobel Prize in Physics for discovering what’s now known as cosmic microwave background radiation. In other words, in the [big data](#) raining down from Big Sky, they managed to hear the remnants of the Big Bang. Penzias and Wilson helped the Big Bang Theory defeat its primary rival, the Steady State Theory, as the prevailing scientific model of the universe.

Nowadays, in the era of big data, there is what we could call the Big Data Theory, which is challenging steady state theories that have been the bedrock of the status quo within the data management industry for decades.

Although I don’t doubt the theoretical potential of big data, I remain cautiously optimistic about big data becoming the prevailing data model of the business universe. After all, when

## SECTION 3: BLOGS (CONTINUED)

performing analysis on a data set of any size, it's hard to determine if what you've discovered is a meaningful business insight or data quality issue.

The reason that I like the Penzias and Wilson story so much is it illustrates that while big data will deliver more signals, not just more noise, we won't always be able to tell the difference. Furthermore, it also exemplifies how an insight can be resisted when a big data set contradicts the preconceptions of the people performing the analysis.

Even though big data analytics will reveal wonders, I can't help but wonder how often the tepid response to it will be: "Yeah, well that might be what big data shows. But it's just a theory." ■

### DATA GOVERNANCE FOR ALL. OR IS IT?

BY KIMBERLY NEVALA | FEBRUARY 11, 2014

"One size doesn't fit all" is a well-known refrain in the data governance community. Typically, this well-worn but evergreen adage is applied when discussing organizational structures. Two companies in the same industry, of like size and means, with similar objectives can take drastically different approaches for

instantiating data governance within their organizations. Culture, organizational maturity and incumbent practices all influence the shape of the program to come.

But the adage applies to more than just the organizational structure and dynamics of data governance. Successful data governance programs right-size not only how data decisions are made, but also associated data policies, practices and procedures as well. Which is, of course, what makes data governance so difficult – and fun.

When assessing the fit of your data governance practices consider the following fallacies:

#### ALL FOR ONE AND ONE FOR ALL

When determining decision rights, the first step is often cataloguing all data creators and consumers. But in the case of customer or product data, this will include every function and process in the organization. There isn't a conference table big enough, or timeline long enough, to bring everyone to the table every time. Much less to agree on anything. Instituting data governance requires some hard decisions about who gets to decide and who doesn't.

## SECTION 3: BLOGS (CONTINUED)

### SAME DATA, SAME POLICY

Traditional data policies often take a blanket approach to security, access and privacy. For example, customer data is segmented into discrete categories: confidential, private, public and so on. Each category has discrete data protection and access rules that apply to all systems and processes equally.

Today, however, we recognize that it's just not that simple. Data privacy, security and access policies must address not just the content of data but also the context of use. A multi-dimensional approach ensures that data is available for multiple purposes while balancing the access versus risk equation. In this way, organizations can enable unfettered discovery (the hallmark of forward-thinking analytic projects) within tightly controlled environments without opening the flood gates and sacrificing security and privacy in a broader operational context.

### ONCE A RULE ALWAYS A RULE

Once and done? Not so fast. As business practices change, so must data governance policies and rules. As an example, several clients – particularly in the public sector – point to legacy policies that prohibit access to and dissemination of data at the same time open data initiatives are being championed. Developing clear

pathways for communicating, evaluating, updating and even sunseting established data policies and rules is critical.

### ALL DATA IS CREATED EQUAL

I have not met an organization yet that has a dearth of data issues. But where to start? With unlimited time and budget all data would be pristine and managed impeccably. To state the obvious: This is just not the case.

As a result, data governance must be responsible for creating a balanced data budget: ensuring that all data is managed in accordance with its strategic importance and value. Done right, data governance creates a corporate agenda for data that establishes data priorities and ensures that associated investments (technology and skills) are optimized.

### AN A IS AN A IS AN A

In grammar school grades were based on clearly defined and inviolate thresholds: A = 100-90, B = 89-80 and so on. When it comes to grading our data the equation is not so clear. In the case of data quality what constitutes “fit for use” can fluctuate wildly. There are circumstances where 50 percent data completeness is

## SECTION 3: BLOGS (CONTINUED)

good enough. And others where 100 percent accuracy is the name of the game. The criteria for a green light (an A) on the associated data dashboard will be different.

The investment given to the care and feeding of these different elements should be apportioned accordingly. Can't make the case for how improving the data will increase operational efficiency, enable strategic objectives or reduce risk? See the point above.

### ONE METHOD TO RULE THEM ALL

Not only can we not apply the same grading scale to all data, the same data management methods and mechanisms may not apply either. Prior to [big data](#), companies often applied (or intended to apply) unilateral methods for data quality, metadata management and so on. But as organizations dive into different data pools and usage models, different methods can be required.

For example, the mechanisms for assessing and addressing data quality may differ for data sourced from internal operational systems versus social media data or other content acquired from third-party sources. For the former, established "small data" quality practices focusing on data correction apply. For the latter, data augmentation may be more appropriate to address identified deficiencies or gaps. In both cases measurement is required to establish a level of confidence in the data.

### EVERYONE SHALL COMPLY

Or shall they? Consider the data governance chicken and egg: We don't have a sanctioned data policy because our systems aren't compliant. Our systems aren't compliant because we don't have a sanctioned policy. The issue? An expectation of blanket compliance. Overnight.

When creating policies and rules an execution plan must exist to address when, how and even if (for special cases) compliance will be achieved. Incrementally as updates are made to systems (creeping compliance)? As a discrete program or project? Other?

Note: A waiver is a sanctioned exception to the rule. Most often applied to legacy systems or processes soon to be sunset, or where the cost and time to correct outweighs the perceived risk or overhead noncompliance creates. Processes and applications that do not meet established criteria should not be given a waiver in lieu of a plan to become compliant.

Interested in learning more about creating a right-sized, sustainable data governance program? See our SAS white paper [Sustainable Data Governance](#). ■

## SECTION 3: BLOGS (CONTINUED)

# A SEASONAL PERSPECTIVE ON A SINGLE VERSION OF THE TRUTH

BY JIM HARRIS | SEPTEMBER 24, 2014

Yesterday was one of the two times a year that an equinox occurs. From its Latin roots, the term equinox translates as equal night since, on the day of an equinox, daytime and night are of approximately equal duration. This occurs because during an equinox the sun is aligned with the center of the Earth.

An equinox also marks the changing of the seasons. What seasons, however, depends on your perspective. If you live in the Northern Hemisphere, yesterday marked the end of summer and the beginning of autumn, making it the autumnal equinox from your perspective. Whereas, if you live in the Southern Hemisphere, yesterday marked the end of winter and the beginning of spring, making it the vernal equinox from your perspective.

So depending on what side of the planet you live on, autumn either starts in September or March. Or if you live somewhere along the equator, such as Indonesia, then autumn never starts because the seasons never change.

My equinoctial point is the different perspectives about the equinox sheds an equal amount of light and dark on a key concept of MDM that has always tied me in unequal knots - a single version of the truth. While I understand the value of creating the best representations of master data entities (parties, products, locations, assets), this is but one of various, and business-justifiable, [versions of verisimilitude](#) applicable to an organization, especially depending on where in the organization you work.

This doesn't mean that your enterprise shouldn't enjoy the view from the equator. In other words, create a single view of master data entities. There are many business needs for it. Just remember there are business needs for other points of view too. And just like the seasons north and south of the equator, those business needs change. ■

## SECTION 3: BLOGS (CONTINUED)

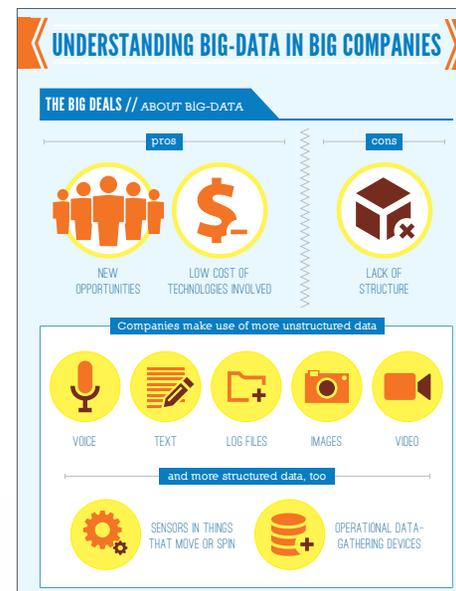
# ALL ANALYTICS: THE COMMUNITY FOR DATA MANAGEMENT, BUSINESS INTELLIGENCE AND ANALYTICS

## BIG DATA IN BIG COMPANIES

Big business has a long history of managing large amounts of data. What most impresses these firms about big data isn't the volume but the opportunity to analyze and take advantage of diverse data sources.

Companies are making more use of unstructured and structured data, as well as new opportunities to benefit from it - at relatively low cost. This blog features a joint SAS-sponsored research report that offers insights about big data strategies at some of the world's largest and most successful organizations, as well as an infographic that provides a quick glance at what the research uncovered.

▶ READ MORE



▶ SEE THE COMPLETE INFOGRAPHIC

## SECTION 4: WHITE PAPERS & INFOGRAPHICS

### THE SAS® DATA GOVERNANCE FRAMEWORK: A BLUEPRINT FOR SUCCESS

Done correctly, data governance can transform the way an organization manages – and capitalizes on – its data. However, because it spans a variety of people, policies and technologies, data governance is a daunting effort. The SAS Data Governance framework is designed to provide the organizational and technological structures needed to overcome common data governance failure points.

[▶ READ MORE](#)



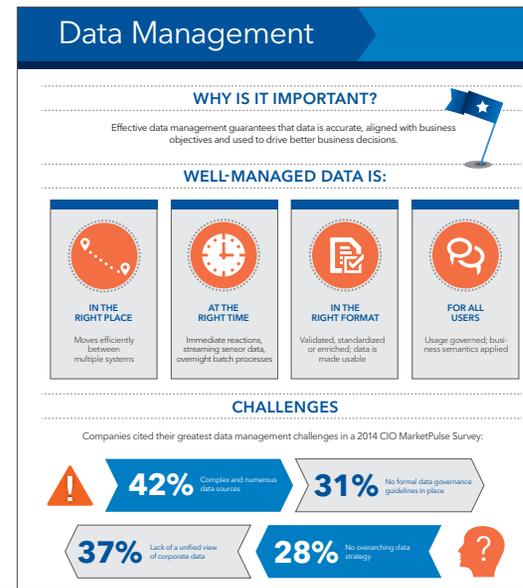
**What is a data governance framework and do I already have one? Read what Daniel Teachey, Managing Editor at SAS, has to say about the data governance framework.**

[▶ CLICK HERE](#)

## SECTION 4: WHITE PAPERS & INFOGRAPHICS (CONTINUED)

### DATA MANAGEMENT: WHY IS IT IMPORTANT?

Effective data management guarantees that data is accurate, aligned with business objectives and used to drive better business decisions. This infographic highlights the characteristics of well-managed data, data management challenges, and the technologies needed for a successful data management strategy.

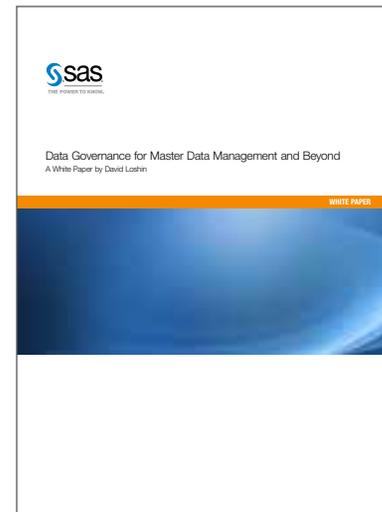


▶ SEE THE COMPLETE INFOGRAPHIC

## SECTION 4: WHITE PAPERS & INFOGRAPHICS (CONTINUED)

# DATA GOVERNANCE FOR MASTER DATA MANAGEMENT AND BEYOND

Data governance saw some initial success when paired with a master data management (MDM) deployment. This paper helps inform those organizations interested in developing a MDM program regarding the methods that should be used to govern the program once it is in place. And it explores how to extend data governance outside of the MDM effort.



▶ READ MORE

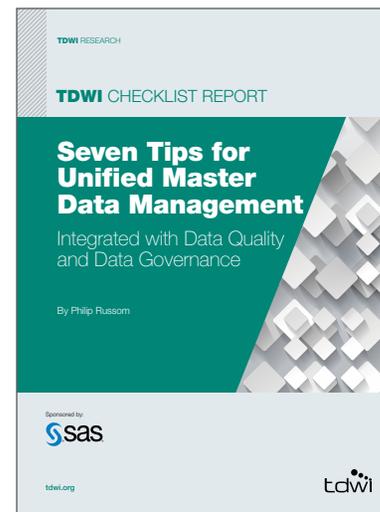
## SECTION 4: WHITE PAPERS & INFOGRAPHICS (CONTINUED)

# TDWI CHECKLIST REPORT: SEVEN TIPS FOR UNIFIED MASTER DATA MANAGEMENT

## INTEGRATED WITH DATA QUALITY AND DATA GOVERNANCE

Many of the challenges to master data management (MDM) are organizational and collaborative issues - not technical ones. Luckily, many of MDM's challenges can be remedied by a well-designed and mature program for data governance. In fact, MDM can suffer without data governance processes for collaboration, stewardship, and change management. Data governance programs are usually founded on a strong mandate, which it can share with MDM to provide much-needed executive sponsorship and a business case.

▶ READ MORE



Read what Philip Russom, Research Director for Data Management at TDWI (The Data Warehousing Institute), has to say about MDM.

▶ CLICK HERE

## SECTION 5: VIDEO

### WHAT IS MASTER DATA MANAGEMENT?

Evan Levy, Vice President of Business Consulting at SAS, describes the core functions of MDM and removes all of the technology confusion with clear examples.



▶ WATCH ONLINE

### 60 SECONDS SMARTER: DATA GOVERNANCE

Learn how data governance addresses the processes and controls required for trustworthy data that leads to better decision making.



▶ WATCH ONLINE

## SECTION 6: ABOUT US

SAS understands that data drives everything. We want to help you make sure it's right. Is your data easy to access, clean, integrate and store? Do you know which types of data are used by everyone in the organization? And do you have a system in place for analyzing data as it flows in? Spend less time maintaining your information and more time running your business with SAS Data Management. It's an industry-leading solution built on a unified platform and designed with IT and business collaboration in mind. It's also the fastest, easiest and most comprehensive way to get data under control, with in-memory and in-database performance improvements helping to deliver trusted information. When it comes to master data management, data integration, data quality, data governance, and data federation, SAS can help you transform big data into big opportunities.

**Learn more** and discover our free white papers, webinars and videos: [sas.com/data](https://sas.com/data)



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