

A professional man with a beard and mustache is shown in profile, looking down at a tablet device he is holding. The screen of the tablet displays a vibrant, abstract bar chart with red, orange, and yellow bars against a dark background. The man is wearing a dark suit jacket over a light blue shirt. The background is a blurred cityscape at night with bokeh lights.

INFLUENCER INSIGHTS FOR THE INTELLIGENT ENTERPRISE

MicroStrategy®
Analytics and Mobility



THE ROLE OF DATA IN DIGITAL TRANSFORMATION

A conversation with
Constellation Research
Principal Analyst, Founder
and Chairman Ray Wang



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INTRODUCTION

The exponential pace of disruptive innovation is fundamentally changing the way enterprise organizations do business. In response, companies are looking to digital transformation initiatives as the key to the discovery and development of new business models and long-term business survival.

According to Richard Foster from Yale, the S&P 500's average age of a company since 1959 was about 58 years. It's now down to 15, and Foster predicts it's going to be 12 years by 2020. For digital transformation initiatives, there's no time to wait, says Ray Wang, Principal Analyst, Founder and Chairman of Constellation Research. "Digital Darwinism is unkind to those who wait."

"We're talking about a 3x to 4x compression in terms of age of a company since the 50s and 60s. So, if you're not making the shift - if you're not even moving in that direction - you're probably going to be merged, be acquired, or go bankrupt."

Ready or not, the future is here. For enterprise organizations, it must be a data-driven one.

MicroStrategy recently sat down with Ray Wang to get his insights and advice on the role that data plays in digital transformation and the advantages an Intelligent Enterprise has moving forward. We hope you'll find this analyst, author and influencer's insights a valuable resource for learning, looking ahead and leveraging data to drive and accelerate your digital transformation efforts.

ABOUT RAY WANG

R "Ray" Wang is the Principal Analyst, Founder and Chairman of Silicon Valley based Constellation Research, Inc. which advises Global 2000 companies on the future, business strategy, and disruptive technology adoption. He's also the author of the popular enterprise software blog "A Software Insider's Point of View." With viewership in the tens of millions annually, his blog provides insight into how disruptive technologies and new business models impact the enterprise.

Prior to founding Constellation, Ray was a founding partner and research analyst for enterprise strategy at Altimeter Group, as well as a VP and Principal Analyst at Forrester Research for business and IT strategy. Wang has held executive roles in product, marketing, strategy, and consulting at companies such as Forrester Research, Oracle, PeopleSoft, Deloitte, Ernst & Young, and Johns Hopkins Hospital.

A background in emerging business and technology trends, digital business model transformation, enterprise apps strategy, technology selection, and contract negotiations enables Ray to provide clients and readers with the bridge between business leadership and technology adoption. Buyers seek Ray's research in future trends and disruptive technologies for his insights into the business processes, business models, and organizational design required for successful adoption.

Ray is a regular contributor to *Harvard Business Review* and is well quoted in *The Wall Street Journal*, *Forbes*, Bloomberg, CNBC TV, Reuters, IDG News Service, and other global media outlets. Wang has won the prestigious Institute of Industry Analyst Relations (IIAR) Analyst of the Year Award three times.

His best-selling book *Disrupting Digital Business* published by Harvard Business Review Press provides insights on why 52% of the Fortune 500 have been merged, acquired, gone bankrupt, or fallen off the list since 2000. The impact of digital disruption is real. However, it's not the technologies that drive this change, advises Wang. It's a shift in how new business models are created. For daily insights, follow Ray on Twitter.



Ray Wang

Principal Analyst,
Founder and Chairman
Constellation Research



SETTING THE STAGE

“Data is the foundation of digital business. It determines how business models are created. It determines how business models are evaluated. It determines how business models are optimized.”

Q: How do you define digital transformation?

A: Constellation Research defines digital transformation as the methodology in which organizations transform and create new business models and culture with digital technologies.

When we look at digital transformation, people tend to think about technology, but it's really about how you change your business models and how you change the way you engage with stakeholders (customers, partners, suppliers and even employees).

We always get the digital part right; we understand the technology part. The problem is we never spend enough time on the business model aspect. That part happens when you're not selling a product anymore, but you're selling an outcome, or you're selling an insight.

Q: What are some key actions or traits common to transformational companies?

A: There are five common traits. Transformational organizations:

- design new experiences and business models
- develop a culture of digital DNA
- apply new technologies to existing infrastructure
- move from gut to data-driven decisions
- and co-create and co-innovate with new partners.

The overarching thing is an organization needs to have a management team that understands the significance of what their digital transformation means. Just as much as digital transformation has to be a bottom up initiative, it must also have a top down push, because there are a lot of tough decisions that need to be made along the way.

Q: What role does data play in digital transformation?

A: It's crucial. You can't do any of it without really good data. Data is the foundation of digital businesses. It determines how business models are created. It determines how business models are evaluated. It determines how business models are optimized, and how they should be adjusted going forward.

You want to make sure that you have a management team that is dedicated to a data-driven culture.

Q: How does an organization move forward with developing a data-driven culture?

A: A data-driven culture starts with something simple: by having people learn to ask questions that might not have answers to them. A lot of times, we only ask questions because we know that data is on the other side. So, we only ask very safe questions.

What we want to do is break employees out of that habit and get them started on asking questions where they might not know the answer. These tend to be your more transformative questions. An example might be, "what would produce better lift – hiring five new FTEs in marketing or adding \$1 million to the overall budget?" People don't normally ask these types of questions because they don't know the answer. What you've got to do is encourage everyone to ask these tough questions within your organization, then figure out how to find the data that gives the answer.

First, you align the data to a related business process, and go back and ask who are the people involved that touch this.

Second, you've got to figure out if that data is actually within your four walls. Most of the time, we discover data is accessed not owned. So then, you need to figure out how is the organization going to get access to that information?

Third, you have to ask how often are we going to need that data? Sometimes that data is out on the edges, like the Internet of Things. It could be batch. You might get a feed every hour, or every day at worst. Sometimes you need that data to be near real-time because you've got to make a decision or an offer to someone who's buying right away. Other times, it has to be real-time, because it's a life and death situation. Sometimes, you need data that's even smarter than that, that's predictive. This is called a time series. We've got to know the time series of the data being used.

These are things that managers and executives dedicated to a data-driven culture have to think about for digital transformation. The best organizations among data-driven organizations aren't the ones that have really good answers. The best organizations are the ones that empower their employees with the freedom to ask better questions.

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DEVELOPING A DATA-DRIVEN CULTURE

Q: How important is the democratization of data across an enterprise organization?

A: One of the hardest things in large organizations is people often find them to be bureaucratic, slow in decision making, and unable to resolve issues. Part of that is because people within the organization don't have the right information.

You want to make sure all employees have the ability to look at the same data at the same time. That way people have an organizational confidence that they're all using the same system and that they're all coming to conclusions (albeit they may be different ones) from the same data.

If you give people that data and the ability to make decisions off that data, it can improve the way everyone is able to make decisions and the speed in which the decisions are made. This will give the organization a better velocity.

Q: What are a few ways to increase data and analytics adoption across an enterprise organization?

A: You want to make sure that decisions made by people within the organization (for example, do we lend this customer credit, do we give the supplier a favorable term, do we send a lead over to partner), are automated as much as possible, but are also in people's hands too, at the end of the day. This is a crucial part of businesses being successful.

The answers or suggestions provided from the data to make decisions have to be relevant for users. If people are accessing data or related systems and it gives answers or suggestions that aren't right or relevant, adoption will suffer.

Q: What are your thoughts on the role of a Chief Data Officer?

A: It's important to have a Chief Data Officer to start the process of digital transformation and becoming a data-driven organization. A Chief Data Officer helps people to understand how data's being used, what kind of governance needs to be in place, the implications bad data, and why the organization needs better types of and better quality of data.

So, it's important to have a Chief Data Officer to start. But to really have a data-driven organization, everybody needs to think and act like a Chief Data Officer. They need to value upstream and downstream data. They need to understand their role in data stewardship. It's a discipline inside companies, just like you would have a financial or marketing discipline. It's also something all executives should have a grounding in. They might not be data and analytics experts, but they should have a good basic understanding.

DEVELOPING A DATA-DRIVEN CULTURE

Q: How important are digital artisans in a data-driven world?

A: We spend a lot of time talking about technology and business models in digital transformation. As part of this, it's really important to take into account how we bring left brain and right brain folks together in an organization.

When it comes to digital transformation initiatives, we need "digital artisans" to help humanize digital and data. There will be lots of scientists, technology, engineering and math people working on a company's initiatives. Let's balance them out with user experience experts, ethnographers, anthropologists, sociologists, people who understand storytelling and design. When you bring left brain and right brain folks together, this helps unlock innovation.

Digital artisans are there to take an organization's data and analytics and humanize it so that it's easily consumable for everyone. Think about visualizations. Bubble charts, histograms, heat maps – choosing the best one to communicate lots of data and lots of insight to the most people so that everyone understands it (and can act on it) is so important.

When we're trying to innovate, we need people who can think outside of the box in a diversity of disciplines. If you bring together a scientist, an engineer, an architect and a designer in the same room they bring their years of expertise in how to solve a problem differently. That intersection of ideas and experience sparks transformative innovation.

To really have a data-driven organization, everybody needs to think and act like a chief data officer"





UNDERSTANDING TERMS, TRENDS AND BIG IDEAS

Constellation
research estimates
that 87% of
successful digital
transformation
projects
incorporate an
underlying data
component.

Source: Constellation Research 2017 Digital Transformation Study

TERMS TO KNOW

Q: What is the difference between real-time and right-time data?

A: Real-time is the data that you get immediately. Real-time is the stream on your Twitter feed or your Facebook home page. It just keeps coming at you. It's a firehose. Most people, though, want to have the right information, at the right time, in the right form, in the right security model.

That means systems need to become more selective of which information gets served up to you. You can't possibly look at 100 pieces of data at once. You want three to five things you need to know right now. So, systems should work their way towards what we call situational analysis or situational awareness where you get the data and information you want or need based on what you're doing.

With right-time data, time, location and contextual clues make a difference in the way information gets served to you. A simple example: when an alert goes out that there's cake on the fourth floor of the office, in a real-times scenario, every employee would get the update no matter if they're out of the office or on vacation; in a right-time scenario, only employees inside the building at that moment would get the update.

Q: You've spoken about a data to decisions paradigm. Can you explain this?

For Constellation Research, data to decisions is more than talking about technologies around big data, data warehousing and analytics. Inside organizations, there's a pathway to getting to better decisions. Enterprise organizations typically don't want more data. They just want to make better decisions.

So, any kind of data that comes into your enterprise, whether it's structured, unstructured, semi structured – the question is how do we organize all that information by business processes (procure to pay, order to cash, campaign to lead, hire to retire)? When organizations can do that, that's when you get information flows. When you get information flows, an organization can start mining them and understanding patterns that generate some levels of insight.

Once organizations have that level of insight, the goal is to take the next best action and make a better decision. That's what the data to decisions paradigm is about – taking data from its rawest form and democratizing decisions inside the enterprise so that everybody has insight into the next three choices they should make (or best actions they should take). This is part of something a lot bigger where you're instrumenting your enterprise to be more intelligent to support another concept: infinite ambient orchestration.

TERMS TO KNOW

Q: What is Infinite Ambient Orchestration?

A: This sounds like a massive buzzword, but it's actually very descriptive of what most data-driven enterprises are trying to achieve. At a higher level, you might just call this ambient computing. Infinite ambient orchestration takes into account three things:

- **Infinite:** Infinite ambient orchestration takes into account the fact that there's no beginning or end to business processes, but that they're contextually intention driven, which means that where an individual is located, the time, the weather, and the people around should drive the next set of journeys.
- **Ambient:** Elements of artificial intelligence provide that contextual relevancy. These capabilities make right-time recommendations to augment decision making.
- **Orchestration:** This is important because we don't often have control of where all of our information comes from. In an age of access not ownership, systems must orchestrate across insight, process, platforms, and ecosystems.

TRENDS AND BIG IDEAS

Q: Taking a look at the trending use of AI for better and faster decision making in digital transformation, what should enterprise organizations consider?

A: There are five elements that are really important in the design of AI-augmented data systems:

- **The systems must be transparent.** You have to understand how the system gets to its decisions. You have to understand the reason why and how an algorithm is created so people know the implications.
- **It's got to be explainable.** This comes back to knowing what causes decisions to occur. When you understand the attribution, you understand the impact of what could happen next and why certain decisions or next best actions have been suggested.
- **It's got to be reversible.** You have to have the ability to reverse decisions, so that if you learn something new, you don't continue to do the old or the wrong thing over and over again.
- **It's got to be trainable.** Training those systems take time. You have to pair people with systems and train these systems over time, so that you and the system know what's going on. There are a lot of false positives you'll have to address, and you'll only catch those by going through scenarios over and over until you get to a point where you're comfortable.
- **It's got to be human-led.** This is the most important part. The process must begin with a human and must end with a human. When you want to shut down a process, you can.

These are important overall design points when you think about digital transformation. They apply to AI and ethics. They apply to how we handle and work with data.



Most organizations would claim that information is their most valuable asset, yet too few have pioneered new business models based on deriving revenue from their information."

Q: In Constellation Research's AstroChart™ for Data to Decisions, some of the bleeding-edge or near bleeding-edge data to decisions trends that Constellation VP and Principal Analyst Doug Henschen makes note of are deep learning, data monetization and insight services. Can you give a short overview of each?

A: These are three new and emerging data to decisions trends that enterprise organizations should be tracking. We encourage executives and managers to view the AstroChart™ and read the full report for context and additional trends:

- **Deep learning** is the study of artificial neural networks and machine learning algorithms that contain more than one hidden layer or "nets". These systems learn multiple levels of representations that correspond to different levels of abstractions. Through supervised classification and unsupervised pattern analysis, these systems learn from the data and iterations. This advanced component of AI supports machine understanding of unstructured information, including text, digitally captured voice interactions and still and video images. Deep learning is changing how humans interact with computers, supporting natural voice interaction and language translation and changing the nature of user interfaces. Deep learning will also enable computers to interpret and react to fast-changing conditions in the real world through advances such as machine vision.
- **Data monetization** refers to how value-added services are built on data to sell not only services, but also insight streams and new experiences. Most organizations would claim that information is their most valuable asset, yet too few have pioneered new business models based on deriving revenue from their information. Early examples include predictive and prescriptive services, sensor-based, Internet-of-Things-style applications and supply chain optimization applications based on finely segmented customer benchmarks. It is early days, but the possibilities for profitable, value-added services are many.
- **Insight streams:** Cutting-edge organizations are analyzing information in all its forms and are delivering descriptive, predictive and prescriptive insights as cloud-based services. Credit card companies, for example, are mining transactions and delivering predictions and recommendations to retailers on high-value prospects and customer buying patterns. Insight services are bleeding edge because they're hard to create: Insights must be actionable and delivered in a timely way as services. Real-time, data-driven performance is a prerequisite.

A close-up photograph of a person's hands holding a smartphone. The screen of the phone is illuminated, showing some icons or a home screen. The background is filled with a bokeh effect of blurred city lights in various colors like red, orange, and yellow, suggesting an urban night setting.

GETTING AHEAD



ENTERPRISE TECHNOLOGY

Q: For enterprises, how important is having a data platform and a single source of truth for all data?

A: It's most important to have a really good data architecture that can traverse multiple platforms to get to a single source of truth. You don't necessarily have to have one data platform, but you need to ensure you have a single source of truth. In most cases, having a single platform gets you there faster.

Having a single source of truth in an enterprise is important. The worst thing that can happen is you walk into a meeting and everybody has a different dashboard and starts with "well my data says..." When you work for the same company, you want to know that everyone's working off the same data at the same point in time. This is fundamental in terms of being able to make decisions and affect change.

WHY DATA-DRIVEN ORGANIZATIONS LEAD

Q: What is the competitive advantage of a data-driven organization?

A: Consistency, longevity, awareness, responsiveness, feedback, market research, and speed and confidence in decisions.

You might have a company that is good at what they do, but they don't have a data-driven organization. In fact, every organization operates on gut sometimes, and gut is darn good for many companies.

A problem arises though when someone leaves, when you have a succession issue or something significant changes. The value of having a data-driven organization is that you have consistency over time. People understand how decisions are made. People understand the implications of data that's being collected and managed, and they take action appropriately. When everyone's involved with and knowledgeable of the company's data, you have longevity. That's the first thing.

Sometimes you can get away with not having a data-driven organization and be successful. But the question is, can you do that over a consistent period of time? The short answer is no.

The second advantage for a data driven organization is that you actually have data to be more responsive. You can identify trends or patterns before they occur. There's a company that can predict by analyzing movie trailers if a movie is going to be a box office hit. To have that kind of insight - that's really powerful stuff. If you didn't have it, you wouldn't know what to expect and what to adjust.

Over time in a data-driven organization you get feedback - what's being used and what's not, what's liked and what's not. That helps you transform and formulate

WHY DATA-DRIVEN ORGANIZATIONS LEAD

new products and services, new workplace initiatives and other offerings. That gives you so much of an advantage, because you have built-in market research in terms of all you do.

The other advantage that data-driven organizations have is that when you make decisions based on facts and data, that increases the speed of decision making. None of this takes away from gut or human intuition, but it allows you to look at that data, make a gut check, look at the data again and say okay, I'm confident in the decision I'm making.

Q: What is your advice to an executive or manager who feels like their organization is behind on effective data and analytics use?

A: The first thing is everybody's behind, and the industries that you think are ahead because they talk about being data-driven, are many times actually the industries that are behind.

Using data effectively in digital transformation is not easy. To make it work, you've got to have your data house in order. Build a foundation to support strong governance, data prep, streaming and agility.

You can't have a digital organization without good data. Good data technology and good data technique have to go hand in hand.

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