Data and analytics leaders cannot master the opportunities and challenges of digital business transformation with yesterday’s roles and yesterday’s organizational design. Now is the time to create new data and analytics roles that are fit for the digital business future.

Analysis

Digital business will not just lead to a technological transformation. It will have equal impact on the design of organizations, and the roles and skills required to drive this transformation.

More than three in four leading-edge organizations are already aware that the skills and knowledge they have today will bear little resemblance to the skills and knowledge they will need to survive and prosper in 10 years' time.\(^1\) (See Figure 1 and “Survey Analysis: What Leading Enterprises Do Differently With Talent and Organization.”)

Figure 1. Skills Will Change Dramatically Over the Next 10 Years

In 10 years, the skills and knowledge in your organization will have little resemblance to the skills and knowledge you have today

<table>
<thead>
<tr>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>77%</td>
<td></td>
<td>23%</td>
<td>0%</td>
</tr>
</tbody>
</table>

n = 149

Source: Gartner (November 2016)
As a data and analytics leader, master the transformation required for digital business by answering these questions:

- Why do you need to rethink existing roles?
- How do you manage a hybrid and distributed organizational model?
- What are the key roles to focus on for data and analytics now?
- Which new roles are emerging and which will become important in the future?

**Strategic Planning Assumptions**

Through 2019, 90% of large organizations will have hired a chief data officer; of these, only 50% will be hailed a success due to a lack of focus on business-relevant outcome improvement.

By 2019, 50% of centrally organized analytics programs will be replaced by a hybrid organizational model that shares power with local domain analytics leaders.

By 2019, citizen data scientists will surpass data scientists in the amount of advanced analysis produced.

By 2020, 10% of organizations will have a highly profitable business unit specifically for productizing and commercializing their information assets.

**Research Highlights**

**The Need to Rethink Roles**

The growing importance and strategic significance of data and analytics is creating new challenges for organizations and data and analytics leaders. While some traditional IT roles are being disrupted by "citizen" roles performed by line-function business users, new hybrid roles are emerging that span functions and departments and blend IT and business roles to become almost the norm.

Several key factors are contributing to the emergence of these roles:

- The increased strategic importance of data and analytics, driven by the digital transformation, calls for the creation of an executive-level data and analytics leader.
- The omnipresent decentralization of data and analytics use cases leads to many part-time and hybrid roles across departments and lines of business, including IT, thereby increasing business complexity.
- The trend for algorithmic business is creating new responsibilities and roles for those managing data and analytics.
Traditional data management roles are impacted by the emergence of new user profiles demanding more autonomy in data management activities. Data management roles also need to evolve to meet new and increasing demand for accessing data.

New citizen roles, such as citizen data scientists, citizen stewards, citizen integrators and data engineers, are complementing traditional roles and require new ways of considering responsibility and accountability for data management activities.

Core architect roles remain crucial for guiding data management activities, but more as an embedded capability in business domains, as opposed to a focus on a distinctly independent or centralized function.

See:

- "Why You Need to Rethink Your Data and Analytics Roles Now"
- "Organizing for Effective Data Management in Digital Business"

The New Hybrid and Distributed Organization

Data and analytics are used across the whole organization. No longer can either multiple disparate teams or a single centralized team with a single organizational structure be identified. The reality is a hybrid and distributed organizational model, spanning all data uses and analytics use cases in the organization. Data and analytics leaders must optimize their domain-specific analytics competencies for success in the digital business, and to sufficiently support multiple use cases (see "Domain Analytics: Harnessing the Pervasive Nature of Analytics").

There is a gradual shift toward the office of the chief data officer (CDO) leading data and analytics strategy and practice, with an initial focus on agreed, strategic data and analytics use cases and then a broadening over time. The second Gartner CDO survey revealed that early adopters of the CDO role and the office of the CDO are pioneering a new organizational function alongside IT, business operations, HR and finance (see "Survey Analysis: Second Gartner CDO Survey — The State of the Office of the CDO").

Data and analytics leaders should:

- Plan to establish an office of the CDO to manage information assets; deliver insights to the business to improve decision making; and generate incremental revenue.
- Study the trade-offs of different organizational models, fitting the model to the organization’s present needs and future roadmap.
- Create a two-tiered organizational model with a centralized team working collaboratively with a collection of decentralized teams distributed throughout the organization.
- Create a list of the decentralized functions needed throughout the organization that require some autonomy for how they:
  - Govern, steward, integrate, analyze and report data.
Govern, steward, model, develop and innovate with analytics and decision models (these teams can be organized by horizontal function, such as sales, HR, finance, line-of-business function and region, but make sure to identify the respective domain or functional analytics leaders to cooperate with them).

Strike a balance of power between centralized and decentralized teams, based on the top-down versus bottom-up culture of the organization.

See:

- "Staffing the Office of the CDO"
- "Create a Centralized and Decentralized Organizational Model for Business Intelligence"
- "How to Organize Your Marketing Analytics Team"

Figure 2 gives an example of different data and analytics teams within an organization and their respective key roles.

**Figure 2. Example of a Distributed Data and Analytics Practice With the Roles Mentioned Herein**

**Office of the CDO**
- Chief Data Officer
- Chief Analytics Officer
- Information Product Manager
- Data Sourcing Manager
- Other Roles Inherited From Central D&A Team

**Central D&A Team**
- Information Architect
- Facilitator/Communicator
- (Lead) Information Steward
- Business Analyst/Developer
- MDM Program Manager
- Data Engineer

**Decentralized Teams**
- Information Steward
- Business Analyst/Citizen Data Scientist
- Citizen Data Engineer
- Business Process Analyst
- Algorithmic Domain Experts and Trailblazer

**Data Science Laboratory**
- Data Scientist/Statistician
- Geeks/Unicorns
- Data Engineer
- Information Steward

**Operational Intelligence**
- Op. Intel. Leader
- Business Process Analyst

**D&A = data and analytics**

Source: Gartner (November 2016)

**Ten Data and Analytics Roles to Focus On Now**

This section highlights the following important roles that data and analytics leaders need to consider:
The Executive Roles: CDO and CAO

In the past, the leaders of data management and data integration, and the leaders of business intelligence and analytics, were in middle management roles, without the necessary charter and power to leverage and drive the strategic importance of data and analytics to create business value on a corporate level. However, an increasing number of organizations are creating (or thinking about creating) the role of CDO to establish the importance of data and analytics on an executive level (see "Business Case for the Chief Data Officer"). Other organizations expand the charter of the existing data and analytics teams, thus actually creating an office of the CDO.

Chief Data Officer (CDO)

The CDO is a senior executive who bears responsibility for the firm’s enterprisewide data and information governance, control, policy development and effective exploitation of data to deliver business outcomes, including for the organization’s analytics strategy. The CDO is the executive with the main responsibility and accountability for enterprise information assets. This role delivers insights to the business to improve decision making and generates incremental revenue. Success is predicated on the organization’s ability to establish a data-driven culture. The CDO is a crucial role in leading this transformational change.

See:

- "Toolkit: Chief Data Officer Job Description"
- "How Chief Data Officers Show Leadership in Influencing the Data-Driven Culture"

Chief Analytics Officer (CAO)

In cases of specialization or organizational size, a separate role, such as the CAO, may emerge to focus on the analytics strategy. The CAO defines and sets the enterprise strategy to use analytics to advance its business mission and goals. As such, the CAO is the head of all enterprise analytics,
decision-making affecting analytics, and analytics capabilities employed by the organization to achieve its goals. The CAO directs analytics processes, and may be responsible for analytics support to other executives and for using analytics to drive innovation and enterprise objectives. The CAO is also a business strategist who knows the flow of information, understands its context and is aware of how it links across the enterprise with regard to deriving value within and for the business. The CAO sets the strategy for enterprise analytics as a business discipline and for using data as an asset to meet enterprise objectives.

See:
- "Toolkit: Chief Analytics Officer Job Description"
- "The Life of a Chief Analytics Officer: A High-Wire Balancing Act"

The Data-Driven Facilitator

A data-driven culture is one mindful of data and analytics practices as these become more central to people’s roles, fostered by growing digital literacy and ready access to self-service analytic tools. This requires facilitators to support the establishment of a data-driven culture.

A facilitator’s primary responsibility is to ensure that stakeholder requirements are identified in the most effective and productive manner possible. Successful facilitators actively encourage stakeholder interaction, debate and extended thinking, as well as managing the team dynamics.

Facilitators are responsible for:
- Facilitating new data-driven thinking by identifying decision-making requirements
- Curating information as an asset to facilitate stakeholder participation in a data-driven culture
- Ensuring that the initiative remains focused on the overall needs of the supported business units

See "Facilitators Are Crucial for Stakeholder Engagement in a Data-Driven Culture."

The Analysts

There is no single type of analyst, rather a spectrum of analysts. Their roles depend on the data and analytics use case, vary by interaction, and introduce different responsibilities and skills requirements:

- **Analytics consumers** — Their preferred interaction is to consume prebuilt reports and dashboards. They expect interaction, such as filtering or drill-down, but do not actively develop analytic output.
- **Business analysts** — The key responsibilities of business analysts are to develop reports, dashboards and interactive visualizations, and to work with data warehouses, data integration and data modelling.
- **Citizen data scientists** — These are not formally trained data scientists, but can still execute a variety of data science tasks, supported by technology such as smart data discovery tools.
They possess the ability to extend their analytic prowess and use their business acumen to derive advanced insights, moving closer to what data scientists can offer.

- **Statisticians** — Almost the advanced version of the business analyst, with key responsibility for analytic models and programming.
- **Data scientists** — Critical key staff members who can extract various types of knowledge from data, who have an overview of the end-to-end process, and who can solve data science problems.
- **Quant geeks** — These excel in a specific range of quantitative skills. In certain situations they are a "nice to have," but in rare situations a "must have."
- **Unicorns** — Data scientists who are extremely well-versed in the whole range of desired skills. They are the "know-it-alls" and are romanticized every now and then in the literature. They are very rare.

See:

- "Staffing Data Science Teams"
- "How Data Scientist Skills and Qualifications Differ From Those of BI Analysts and Statisticians"

### The Business Process Analyst (BPA)

An ERP BPA is responsible for business process improvement in the context of an on-premises or hosted ERP suite. BPAs take a critical viewpoint on managing a business process from end to end in the context of a business outcome/performance, rather than managing application performance, which addresses merely a technical view.

The primary role expansion for BPAs includes the following work or tasks:

- Identify the most critical data needed by each application — separate that which is most important from that which is least important.
- Identify which business processes warrant centralized/global governance, versus those that require regional and local governance.
- Determine the information governance policy needed and the goals/targets for each data element.

See:

- "Resolve Postmodern ERP Data Complexity and Consistency Through Effective Engagement of Business Process Analysts"
- "Ease Postmodern ERP Complexity Through Better Use of Business Process Analysts"
The Data Engineer

Data engineers make the appropriate data accessible to data scientists or data analysts. This leads to potentially big productivity gains as much of the time spent experimenting with data is time spent combining data. Data engineers are the mission-critical support staff, in particular for large data science teams. In contrast to data stewards, their core tasks will be much more tactical and might include:

- Helping data scientists to prepare data (see "Data Preparation Is Not an Afterthought")
- Assisting with initial data exploration steps (binning, pivoting, summarizing and finding correlations, for example)
- Cataloging existing data sources and enabling access to resident and external data sources
- Supporting data stewards to establish and enforce guidelines for data collection, integration and processes

See:

- "Staffing Data Science Teams"
- "Organizing for Effective Data Management in Digital Business"

The (Enterprise) Information Architect

The information architect strengthens the impact of, and provides recommendations on, business information that will need to be available and shared consistently across the company through the identification, definition and analysis of how information assets drive business outcomes. The information architect is responsible for discovering the data and analytics requirements for information for all uses, such as:

- Assessing the benefits and the risks of information by using tools such as business capability models to create an information-centric view to quickly visualize what information matters most to the organization, based on the defined business strategy
- Using tools such as business information models to provide the organization with a future-state view of the information landscape, unencumbered by the specific data implementation details imposed by proprietary solutions or technologies

Partnering with business unit leadership, and through the rationalization of the information value chain, the information architect will provide strategic, information-based recommendations to protect the organization from disruptions while also embracing innovation.

See:

- "Toolkit: Sample Job Description for the Role of Information Architect"
- "Information Architects Need to Help the CDO in Five Key Areas"
- "Toolkit: The Information Architect's Playbook for EIM"
Information Stewardship Ensures Data and Analytics Governance

**Lead Information Steward**

With information stewards spread across the organization (along department/functional lines or business process lines), there is a critical need to coordinate stewardship activities for consistency and leverage. The lead information steward drives this coordination by establishing standards for how stewards execute their activities (for example, specific work step tools used) and how they communicate their actions to their peer stewards, and upward to the information governance board.

The lead information steward also:

- Helps the steward population to interpret policies created by the board with the goal of establishing clarity and quality in policy enactment
- Represents peers and junior stewards on the information governance board

**Information Steward**

The information steward role is focused on the enforcement of information governance policies created by the information governance board. In effect, the steward is responsible for implementing information governance policies and monitoring information assets and people against those policies. When deviations from policy are detected and not resolved through automated means, the steward is the focal point for issue resolution.

See:

- "Toolkit: Information Governance Role Descriptions"
- "A Day in the Life of an Information Steward"

**Master Data Management (MDM) Program Manager**

The MDM program manager ensures that changes to the organization and business direction that impact the MDM program are fully assessed and acted on. These include:

- An MDM vision statement that has been defined and agreed with business and information stakeholders
- Aligning the scope of each phase of the program with the enterprise information management (EIM) strategy
- Identifying the business scenarios for each phase of the program, using the MDM business case
- Identifying the key business processes that will be affected by the MDM program, and verifying that the correct stakeholders are included above

See "Toolkit: A Program Manager’s Guide to MDM."
Emerging Roles for Algorithmic Business

As the transformation toward the digital and algorithmic business continues, new roles will emerge that often introduce a blend of IT and business roles. In fact, the lines blur, and some no longer exist.

Get ready to develop new roles, such as the following:

- **Information product manager** — This role is vital when business and information leaders agree on directly monetizing data by generating revenue or other financial benefits from exchanging it. The role includes conceiving and planning new ways to monetize data; identifying or developing markets for information among partners and others; and coordinating with IT, marketing, finance, legal and other product management groups to execute information product objectives (see "Seven Steps to Monetizing Your Information Assets").

- **Data sourcing manager** — This role "owns" the requirements for data acquisition, and works with procurement teams who own the vendor selection and negotiation. Data sourcing managers also work closely with records managers and compliance managers to make sure data brokers comply with existing rules and regulations (see "Staffing the Office of the CDO").

- **Operational intelligence roles** — These roles are involved in designing and building continuous operational intelligence into business processes. Business operations require that business analysts, analytics professionals and software developers acquire new skills and perform new functions. Operational intelligence spans analytics, business applications, business process optimization and decision automation (see "Why You Need to Rethink Your Data and Analytics Roles Now").

- **Algorithmic business domain experts** — Business acumen, deep industry knowledge and consumer behavior characterize these individuals. They operate at the intersection of deep business and deep algorithmic skills — a rare blend (think of people who build algorithmic trading models for the stock market or seismic engineers who discover oil through analytics). With their business domain expertise, they know when and how to apply what modelers and data scientists build (see "Match Talent Profiles to Algorithmic Business Ambitions").

- **Algorithmic business trailblazers** — Trailblazers know how algorithms lead to competitive advantage. They have a broad and detailed view of an industry, to the point that they know which algorithms can markedly differentiate an enterprise from its peers, and when and why to apply them. Further, they have the political and business clout to persuade others to take the risks that algorithmic business requires (see "Match Talent Profiles to Algorithmic Business Ambitions").

Evidence

1 In 1H16, Gartner conducted a survey (to which there were 149 respondents) to learn what leading-edge companies do in terms of talent, culture, organization, innovation, metrics, partnerships and operating principles. We started with the hypothesis that the "best of the best" do things differently.