

How To | Analytics

# Why healthcare organizations should consider implementing a data analytics center of excellence

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By Pam Arlotto and Susan Irby



- As analytics capabilities grow more sophisticated, the structure of data analytics operations within an organization becomes a more pressing question.



- **Traditional analytics structures tend to be either centralized or decentralized, with each approach having benefits and drawbacks.**
- **A data analytics center of excellence represents a hybrid approach, using a hub-and-spoke model to combine the benefits of centralization and decentralization.**
- **A chief data officer can work to ensure optimal implementation and operation of a center of excellence.**

Most healthcare leaders likely would agree that data-driven insights are essential to strategic differentiation, financial performance and operational success. Yet as such insights become more pervasive and complex, the ownership and structural design of the data analytics function have become key questions for many executive teams.

Traditional command-and-control hierarchies and siloed decision-making processes can create a lack of trust and limit the development of analytics insights across the organization. Although various organizational design options for data analytics have merit, leaders should consider implementing a data analytics center of excellence (CoE) and establishing the role of enterprise chief data officer.

## The healthcare data landscape

Many healthcare organizations are moving beyond traditional descriptive or diagnostic analytics, wherein historical data are used to support operational decisions, to advanced analytics. Machine learning, predictive modeling and other forms of cognitive computing and artificial intelligence focus on the forecasting of future events or the personalization of experiences. Advanced analytics can lead to delivery of real-time insights, reinvention of jobs and work practices and disruption of healthcare business models.

Traditionally, healthcare data analytics structures have been entirely centralized or entirely decentralized, with analytics resources, tools and methods either residing with a central group or being embedded within various functions or departments across the organization.

Today, however, data analytics structures have become less clear-cut as:

- Enterprise information systems have expanded through electronic health records and enterprise resource planning systems, along with a variety of tools requiring IT departments to support routine and ad hoc data analysis and reporting.
- Functional division leaders have deployed niche analytics systems in areas such as financial decision support, quality reporting, supply chain, human resources and marketing.
- New sources of data such as customer satisfaction, claims, social determinants of health, retail health and social media increasingly are available.
- Interoperable data expands the breadth, depth and scope of data assets.
- Self-service capabilities increasingly are necessary to support strategic, operational, financial and clinical decision-making.
- Data security and privacy have become top issues for most health systems.

Both centralized and decentralized data analytics organization models have strengths and challenges, as illustrated in the exhibit below.

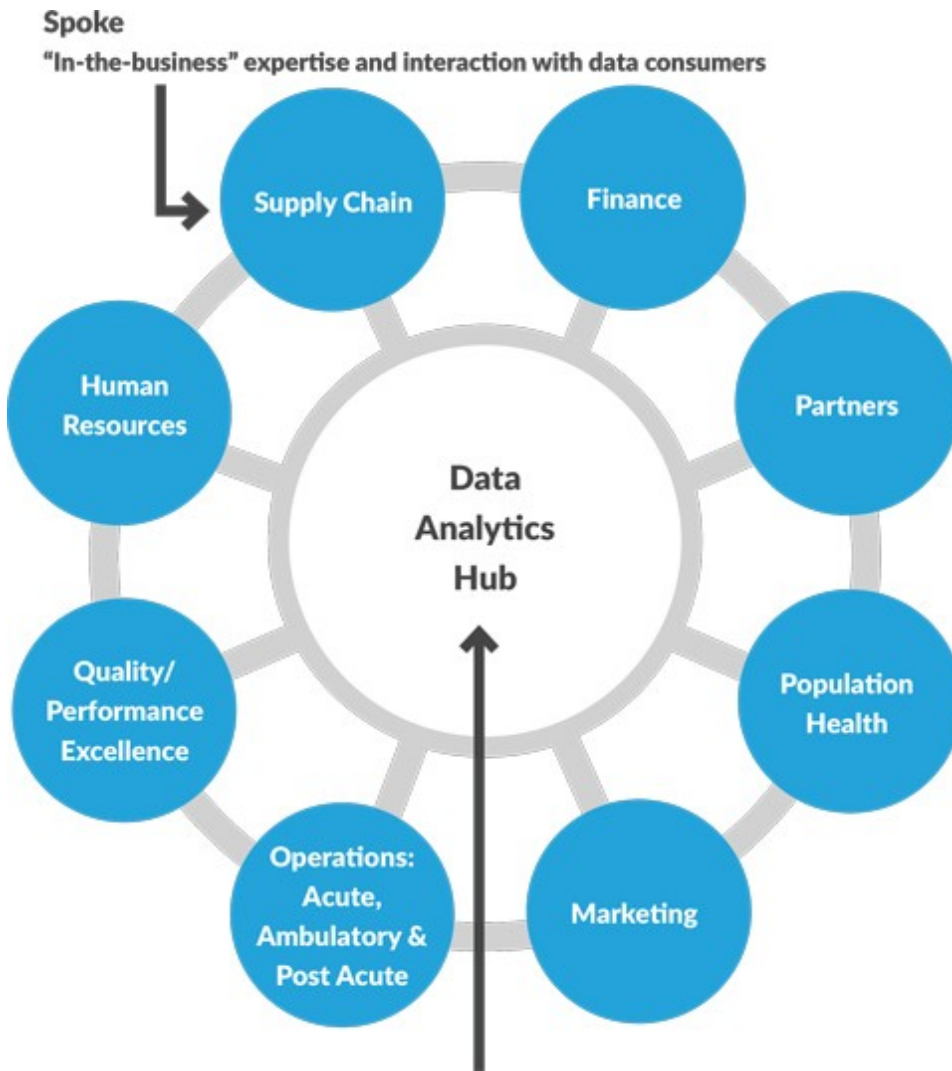
Organization model	Pros	Cons
<p><b>Decentralized:</b> Teams and tools are embedded within business units and focus on departmental needs.</p>	<ul style="list-style-type: none"> <li>• Assets with subject-matter expertise in key areas: finance, clinical, marketing, etc.</li> <li>• Highly responsive to departmental needs.</li> </ul>	<ul style="list-style-type: none"> <li>• Difficult to scale for enterprise initiatives.</li> <li>• Limited incentive to share insights, resources and tools.</li> <li>• Conflicting data, duplication of data, limited communication, unnecessary costs.</li> <li>• All areas not represented.</li> </ul>
<p><b>Centralized:</b> All resources, tools and methods are managed and deployed by a central group.</p>	<ul style="list-style-type: none"> <li>• Can prioritize enterprise view.</li> <li>• Should make it easier to accomplish large, complex projects.</li> <li>• Limited competition for resources (i.e., functional bias).</li> <li>• Ensures standardization and enterprise oversight.</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced responsiveness to departmental needs.</li> <li>• Risk of shadow analytics groups being created.</li> <li>• Requires strong executive leadership</li> <li>• Puts distance between analysts and business users.</li> </ul>

## The hybrid model: the CoE 'hub-and-spoke'

In today's changing landscape, neither the centralized nor decentralized model can fully accommodate the needs of a complex healthcare enterprise. A data analytics CoE, designed using a "hub-and-spoke" arrangement, provides a hybrid of the two models and can incorporate the benefits of both while limiting the respective drawbacks of each.

The CoE model, as seen in the exhibit below, relies on a central hub that functions as a shared service and facilitator of data-driven insights for the organization. The hub clarifies the enterprise data strategy, supports data governance and ensures consistent use of tools, methods, standards and resources across the organization.





<b>Hub responsibilities</b>
<p><b>Architecture, Tools &amp; Technology</b>                      Manages data integration, architecture, development, maintenance, vendor management, etc.</p>
<p><b>Data Stewardship</b>                      Serves as primary advocate within the business to enable alignment of data definitions, data standards and data quality.</p>
<p><b>Advanced Analytics</b>                      Expands expertise beyond day-to-day analytics to include statistical analysis, modeling, data optimization, trending and data mining.</p>
<p><b>Culture and Change Management</b>                      Messages key capabilities, value of insight-driven decision making and overall strategy. Supports "agile" decision making and an iterative approach to analytics discovery, planning and continuous improvement.</p>
<p><b>Program Management</b>                      Ensures governance-delegated strategy is executed, prioritized initiatives are tracked and monitored, standards are established and followed, the voice of the customer is communicated as risk and value are balanced.</p>

**Data Quality Management**

Develops continuous data-improvement plans for all data sources, including data definition, integrity, timeliness and access through policies, processes, mitigation and reporting.

**Coaching, Training and Customer Support**

Educates data creators and customers regarding relevant analytics concepts, applications, tools and methods. Ensures each stakeholder has access to pertinent data sources and provides second-level support for analytics problems.

The spokes are vital because they are more focused and agile than the hub. Each spoke provides targeted, specific expertise to interact with and support the users of data analytics. Examples of data analytics projects within spokes include:

- Financial decision support deploying cost accounting programs
- Marketing analysis of targeted populations and geographies for growth
- Human resources studying employee retention and turnover patterns
- Population health managers stratifying risk and studying the impact of chronic conditions
- Operations examining changes in capacity and utilization
- Service line leaders exploring clinical performance, operational efficiency and customer satisfaction

The table below defines the characteristics of the hub and the spokes.

<b>Characteristics of the hub and spokes</b>	
<b>Hub characteristics</b>	<b>Spoke characteristics</b>
Collaboration	Specialization
Global consistency	Unique characteristics
Cross-enterprise analytics content	Area-specific
Sharing of best practices	Agility
Consensus	Innovation
Enterprise data warehouse/"logical data warehouse"	Point systems
Landscape view	Focused view
Enterprise-level analytics	Departmental analytics
Analytics sandbox	Prototypes
Data scientist	"Citizen" roles

The transition from centralized or decentralized data analytics structures to hub-and-spoke models can be challenging. Many organizations designate a chief data officer (CDO) to spearhead the cl



## Leading the CoE: the role of the CDO

Today's data analytics CoEs vary widely in organizational scope, responsibility and authority levels. The CDO can ensure that:

- Governance-delegated analytics strategy is executed
- Analytics structures and operating models are deployed at increasing maturity levels
- Standards are established and followed
- The "voice of the customer" is heard and communicated
- Agile decision-making is enabled
- Balance is achieved between risk and value

More specifically, the CDO should lead the following initiatives.

**Assessing enterprise data analytics maturity.** Evaluate the effectiveness, consistency and capabilities of data analytics across the organization.

For centralized organization structures, ask functional decision-makers about their use of data:

- Do they trust reports and analytics results?
- Are the data outputs timely?
- Do analysts understand the business or clinical problem the decision-maker is trying to solve?
- Are the various options for scorecard development and advanced analytics understood?

For decentralized organization structures, ask decision-makers:

- Are tools, methods, expertise and data sources shared?
- Is there considerable rework from division to division?
- Does collaboration occur across the organization for complex projects?
- Does data analytics support enterprise strategic priorities?

**Defining the strategy for advanced data analytics.** An effective data strategy should consider how the organization wants to use data; expand the organization's capabilities in sourcing, combining and managing data; and transform the organization's decision-making capacity through data-driven insights.

**Launching demonstration projects or quick-win initiatives.** Rather than rushing to build a CoE, start with a few quick wins. For example:

- Engage decision-makers from decentralized functions with a problem to solve.
- Collaborate with analytics and subject-matter experts.
- Define key hypotheses, data sources, definitions and analytics tools.
- Develop an initial prototype.
- Generate insights and a plan to operationalize them.



- Communicate the lessons learned and identify future quick-win initiatives.

Over time, as these initiatives gain traction, the CoE can be formed.

**Developing the hub-and-spoke operating model.** This step entails establishing the roles and responsibilities of both the hub and the spokes, developing a roster of domain experts, acquiring talent (e.g., experts in data mining, statistical analysis, modeling and data optimization), that might not exist in the organization today, and communicating the key capabilities of the CoE to the organization.

Education programs for data creators, analysts and users regarding relevant analytics concepts, applications, tools and methods should be developed and deployed across the enterprise.

**Planning for data quality.** Alignment of data definitions, data standards and data quality can be attained by identifying information sources and ensuring consistency, completeness, validity and timeliness. For all data sources, the CoE should develop continuous data-improvement plans that describe the following data processes and protocols:

- Creation (i.e., inputs into source systems)
- Curation
- Integrity
- Timeliness
- Access rights
- Security
- Protection and preservation

The CDO should catalogue enterprise performance metrics and key enterprise scorecards and develop plans to streamline and harmonize data processes and ultimately to move to self-service.

## The potential for transformational benefits using a CoE

Success of the hub-and-spoke model for data analytics will depend on thoughtful consideration of the unique characteristics of each organization. By leveraging and unlocking the value of enterprise information assets, a data analytics CoE will generate an insights-driven decision-making culture, enhance advanced analytics effectiveness and drive transformational change.

### About the Authors

**Pam Arlotto** is president and CEO, Maestro Strategies ([parlotto@maestrostrategies.com](mailto:parlotto@maestrostrategies.com) (<mailto:parlotto@maestrostrategies.com>)).

**Susan Irby** is data analytics practice leader, Maestro Strategies ([sirby@maestrostrategies.com](mailto:sirby@maestrostrategies.com) (<mailto:sirby@maestrostrategies.com>)).



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