CASE STUDY:

Buildout of a Dedicated Scientific IT Office

BIOTEAM
Accelerate Science

Challenge

A national government organization approached BioTeam to help them understand how the organization and the IT department could better meet scientists' needs. They faced several primary challenges:

1. The need to develop a better understanding of researcher requirements at the institution

2. The need for advice and support on how to meet these requirements

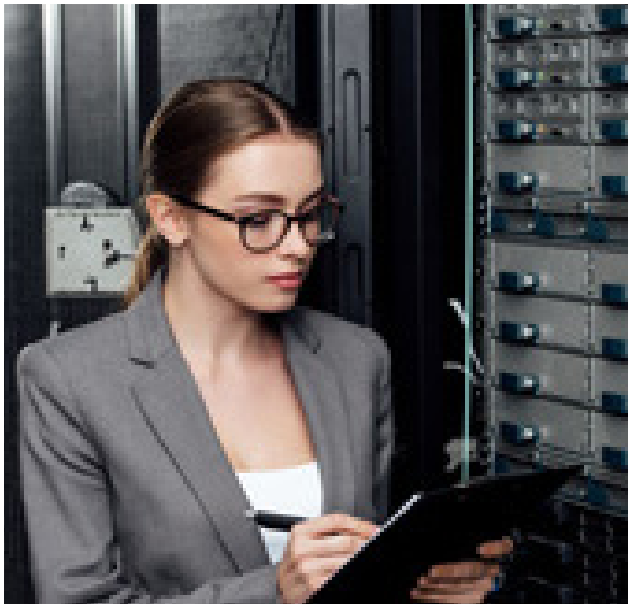
3. Aging infrastructure without a centralized storage system able to meet either the increased data growth or demand to share data easily

Approach

This project is a long-running engagement between BioTeam and the organization to provide holistic scientific IT support and strategy ranging from infrastructure to bioinformatics.

PHASE 1: Understand IT and Infrastructure Problems

During the project's initial phase, BioTeam conducted a deep-dive scientific assessment of IT and scientific data storage needs across all the organization's labs and cores and an in-depth evaluation of the current network infrastructure. The evaluation resulted in a wide range of recommendations, including the need for significant improvements including:



- A need for an extensive, expandable scientific data storage system.
- Data management and sharing support including trainings.
- Modernization of the scientific network infrastructure to support larger datasets.
- Bioinformatics support accessible to all researchers in the organization, including Artificial Intelligence and Machine Learning.
- Hire a dedicated Scientific Information Officer and develop and IT strategic plan.

PHASE 2: Establish a Dedicated Scientific Information Office

In the next phase, the organization engaged BioTeam to help execute the recommendations made in the assessment.

BioTeam established a dedicated Scientific Information Office to provide researchers with effective scientific IT leadership and support. This included strategy advice for the organization's leadership, support for scientific IT infrastructure development, and advice on

data management/sharing infrastructure and policy. BioTeam also established a dedicated Bioinformatics Core to support researchers with their bioinformatics needs. The Scientific Information Office was led by a BioTeam consultant who acted as the organization's Scientific Information Officer (SIO). The Office was supported by a broad range of BioTeam consultants and data management, networking, and storage system management engineers.

BioTeam drove and participated in leadership-level IT strategies and worked closely with the organization's internal/external leadership, IT staff, scientists, and third party vendors. BioTeam also developed a range of support mechanisms where IT staff and scientists could discuss IT-related challenges and find solutions in real time. The SIO and members of the Scientific Information Office engaged researchers, labs, and core facilities across the organization, and developed individual scientific IT solutions to tackle the unique challenges faced by each lab.

BioTeam's work in the Scientific Information Office consisted of:

- Bioinformatics and IT support for researchers and clinicians consisting of ad hoc and project-based engagements.
- Scientific IT support to implement a proof-of-concept for a high-performance scientific storage system.
  - Plan and design a next-generation storage and data management infrastructure.Security policies that may not be necessary for the scientists' research were inhibiting internal and external collaboration efforts.
  - Deploy, validate, and performance test two vendor solutions based on the organization's real-life scientific use cases to select one solution for future production buildout.
  - Oversee the roll-out of 10GbE network connectivity in labs and cores to facilitate access to the system.
- Effective technical project management support for complex scientific IT projects.
- Scientific IT strategy support for leadership and IT management driven by the SIO and focused on the long-term success and sustainability of the organization's research IT portfolio.
- Developing and implementing a data management and sharing strategy for the organization to improve the use of available storage and data platforms—and ensure data

security. BioTeam conducted data science retreats with the organization's community and IT staff to assess and identify researchers' obstacles to data sharing. In addition, BioTeam provided training sessions to educate researchers throughout the organization on using platforms and tools (e.g. GitHub) already offered by the organization for data management.

Outcomes and Next Steps

BioTeam established a new Scientific Information Office at the organization that directly supports their researchers and scientific mission.

- BioTeam successfully installed a scientific data storage system for the institution. Researchers are transitioning away from USB sticks and external hard drives for storage and data sharing and instead are utilizing a centralized institution-wide system.
- Previous unmet needs have been identified and filled, such as implementing an application for the tracking, annotating, and data management of biospecimens through open-source software.
- Several internal groups have been created, including a Clinical IT Strategic Group and Scientific IT Advisory Committee. By facilitating these groups, BioTeam has improved communication and understanding of the scientific IT needs and the security concerns that both researchers and IT face. Issues raised are now addressed collaboratively, resulting in solutions that improve the productivity of the research staff.
- BioTeam continues to work closely with organization leadership to evolve the Scientific Information Office to meet the needs of researchers and align it with the mission.

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