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6 Things to Consider When Selecting a Research Platform.
A selection guide.

Data is one of the most valuable assets of any life science organization as it plays a critical role in driving, sustaining, and directing success. With an ever-expanding and improving technological landscape, the global data sphere is growing exponentially and predicted to reach 165 zettabytes by 2025 *(Reinsel, D., et al. 2017)*.

Healthcare related data generation alone has increased by 878% *(Dell Technologies, 2019)*.

The growing importance of data has not gone unnoticed, with investments into R&D digital initiatives increasing by at least 42% (Gartner, 2019). Unfortunately, digital transformation, tasked with improving large scale data creation, utility, storage, and protection, are failing within organizations, according to 89% of business leaders surveyed by Gartner (Gartner, 2019), and 70% of transformation assessed by BCG (BCG, 2020).

There are many factors which contribute to this observed failure, including, but not limited to, research platform selection.

The identification and subsequent implementation of a robust data management platform is essential to providing a foundation for the success of any digital transformation initiative.

People, processes, data, and technology are four foundational corner stones in this context.

To ensure a successful digital transformation, it is essential to consider the following key aspects related to the four foundational cornerstones: people, processes, data, and technology, particularly when selecting a research platform.

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1. Value Your End Users.

Steve Jobs is well recognized as a digital pioneer, revolutionizing the technology landscape of daily life, and always acknowledged that his success in leading global technology transformations stemmed from the contributions of his employees.

He said, "Great things in business are never done by one person; they're done by a team of people."

This statement is true for life science organizations, as these employees are the ones doing the work and using the technologies at their disposal to generate lifesaving therapeutics. Given this, it is always surprising when a new research platform is deployed without much consideration for the end users.

No matter how powerful the system is or how well it aligns to an organizations scientific and compliance needs, if the end users won't or can't use it, the platform is useless. Users should be at the center of any digital transformation. Therefore, to improve the outcomes of a digital transformation, consider the following:

User Adoption.
Recognize the technology mindset of your employees.

If your scientists have been using an established arts and craft methodology of documenting their research in paper notebooks for the last 25 years, they may be just a bit resistant to the idea of moving onto an electronic system, regardless of what that system is. People fundamentally don't like change. Therefore, be prepared to engage employees early in the selection process and seed positive and growing enthusiasm for the new platform long before the platform's launched to promote user adoption.

Additionally, do not assume that because a platform is tagged as 'intuitive and user friendly' that your end users won't need training. Any system is going to take some level of input to learn. However, a system that lacks a significant learning curve and has a user-friendly user interface, will likely promote adoption post training. Ensure that the end users understand and observe (early on) the benefits the system has for their work, be that saving them time, or their fingers from freezer burn, as they locate samples.

The activities described here form part of change management, a framework used to prepare, enable, and nurture employees affected by a change to ensure change adoption. As absent or ineffective change management strategies are primary contributors to the failure of 70% of digital transformations (BGC, 2020), the value of change management to your initiative should not be underestimated.

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End User Skill Sets

Selecting a research platform that demands advanced skills from employees, can be a risky choice if the organization is not prepared to invest in additional training. Without proper training, employees may struggle to utilize the platform effectively, leading to lower productivity and suboptimal outcomes.

Therefore, it is essential to evaluate the level of expertise required to operate the platform before making a final decision. If the platform demands skills that are not already present within the company, management must consider whether it is worth investing in additional training to ensure that employees have the necessary skill set.

By investing in training, the company can ensure that employees can effectively use the platform and achieve the best possible outcomes. However, if the organization is not willing to make the necessary investments, it may be better to choose a platform that demands less expertise, which employees can use more effectively, leading to better results in the long run.

New Tech. Burden

When considering the adoption of a new research platform or technology, it is important to remember that the burden does not end with the initial training. In addition to the investment in training, the organization must also consider the ongoing maintenance and upgrade requirements for the system.

This involves dedicating time and financial resources to ensure that the platform continues to operate effectively and efficiently. If these responsibilities fall solely on the employees, it is essential to evaluate whether they have the necessary skills and time to fulfill these duties while still performing their regular tasks.

If the employees do not possess the skills required for maintenance and upgrades, it is essential to consider other feasible options. This may include outsourcing these tasks to external service providers who specialize in the maintenance of such systems or depending on the software vendor directly to provide these services. These options may require additional financial investment, but they can ensure that the platform continues to operate effectively and that employees can focus on their core responsibilities without being burdened by system maintenance tasks.

By thoroughly evaluating the maintenance and upgrade requirements and considering all available options, the organization can make an informed decision that ensures that the platform continues to provide value and contributes positively to the organization's success in the long run.

2. Let Science be Your North Star.

Before the compass or GPS, sailors would explore the oceans using the stars as a guide. R&D is equally explorative, with scientists depending on scientific theories, hypotheses, and methodologies in the hopes of generating life-saving therapeutics.

These scientific underpinnings of an R&D organization therefore dictate the types of therapeutic agents develop, the personnel hired, and even an organizations marketing brand identity.

Given this power, the technology deployed, inclusive of any research platforms, will also be driven by an organization's scientific pursuits. Although this statement is intuitive; it is frequently forgotten that not all research platforms are made equal. An R&D platform that is well suited for small molecule-based research may be dismal at supporting gene therapy-based workflows. It is not about selecting the best R&D platform on the market; it is about selecting the best fit-for-purpose platform for your scientific use case.

So, what about organizations that work in multiple, non-overlapping, scientific verticals where there is no single best fit-for-purpose solution? Overall, there are two main options to consider in this context:

Option A: One Platform per Scientific Vertical

This solution allows for the best technical support within each scientific vertical. However, sharing data outside of each platform can be difficult and/or requiring expert configure and maintenance. If the systems, and the data within, are not accessible and integrated, then data silos will inevitably occur impeding collaboration, data analysis and decision making. Additionally, maintaining multiple different research platforms, along with any necessary supporting infrastructure, can be burdensome.

Option B: One Platform for All

A single platform is selected that is at least sufficient for all use cases. Cross departmental information transfer is simplified, along with standardization of common workflows. However, any deficiencies in relevant capabilities for one or more teams or departments must be addressed. Supplementary systems are often deployed as a solution, but this will incur additional cost and resources to sustain and integrate the solution with the technology ecosystem.

3. Challenges Matter.

Snowflakes are all composed of frozen water, yet the shape of each is distinct. In the same way, two organizations may leverage the same science in the hopes of developing therapeutics for the same disease, but their specific use cases and challenges are going to be different.

Even the reasoning behind the challenge itself can differ.
Data siloing in one organization may be due to employees being resistant to the use of technology in any capacity; while at another, ever team may use a different digital storage solution. Root cause analysis is, therefore, imperative when solving a challenge, as it will impact solution assessment and ultimate technology selection.

During root cause analysis, it is ideal to map out problematic processes in relation to the overall organizational infrastructure, operations, and processes, thereby visualizing interdependencies and placement within the broader digital landscape. Bottlenecks as well as the flow of data should also be evaluated, keeping in mind that data consumption and production be separated by on or more people, teams, and/or processes. This holistic level of understanding will ensure that only contextually relevant solutions are considered for implementation.

4. FAIR Data

The human heart is vital for life; yet, in the absence of blood, the heart has no purpose. In the same way, a digital infrastructure only has purpose in relation to an organizations data. Therefore, any technological transformation should strive to ensure that data is:
1. Findable
2. Accessible
3. Interoperable
4. Re-usable

The above criteria represent the defining principles of FAIR (Finable, Accessible, Interoperable, Re-useable) data, which, like other data trust initiatives such as ALCOA, aim to promote data longevity and reused. To ensure both short- and long-term returns on investment, you should only select a research platform for implementation that will align with and strive to support such data principles.

4. FAIR Data Cont.

For biotech companies, leveraging data effectively can be the key to success in fields such as drug discovery and personalized medicine. However, in order to extract meaningful insights from data, it must first be managed according to the FAIR principles, ensuring that it is findable, accessible, interoperable, and reusable.

- **Findable.** Ideally data should be easy to find, both for humans and computers, and enriched with relevant metadata to ensure correct understanding and utility thereof.
- **Accessible.** Although data should always be available, appropriate procedures and policies should dictate access authority and control.
- **Interoperable.** Data sets are generally used for different purposes and in combination with one another; therefore, the data should be understandable and formatted to support a diverse array of applications and workflows for ultimate analysis, storage, and processing.
- **Re-usable.** Machine learning and artificial intelligence, considered as the next big game changes in scientific research, depend on data re-use. Therefore, organizations should focus not only on making data understandable, but presenting it in formats that are the least restrictive in terms of licenses and integrating with other data to enable simple re-use.

By following these principles, biotech companies can unlock the full potential of their data and accelerate their research and development efforts.

5. Change is Inevitable.

The best fit-for-purpose research platform solution for any organization, when configured and deployed appropriately, will address **current** challenges and scientific and operational use cases. The word 'current' in the previous sentence is an important distinction.

In five years, due to the constant evolution of science and technology, an organization may face different challenges.

Therefore, system evaluation should be done with a focus on the current situation, but with an eye to the future. Important questions to ask is whether your organization will outgrow a particular platform in a few years, if the software supports configuration flexibility to support ever evolving operational and scientific workflows, and if the vendor actively invested in developing and enhancing its product?

6. Digital Transformation. A Marathon, Not a Sprint.

The final, and likely the most important consideration, is to keep in mind that a digital transformation is a multi-step process. There are many changes, at a technological, operational, user, and even data level, that need be undertaken to ensure a viable technology revolution and aid in organizations reach the goal of FAIR (finable, accessible, interoperable, re-useable) data.

The Big Picture

The details above are not an exhaustive list but should provide a powerful starting point for your technology journey. Conscious intention and planning, like any good scientific research endeavor, will go a long way in ensuring ultimate success. Remember that this is not a journey you need to undertake alone. Here are ProPharma group we are always ready to partner with as you navigate your technology landscape and aid in your success.

For biotech companies seeking to unleash the full potential of their data and drive meaningful innovation, selecting the right research platform and implementing best practices for data management is essential. At ProPharma, we are dedicated to helping biotech companies like yours achieve your research and development goals. Contact us today to learn how we can work together to unlock the power of your data and drive game-changing discoveries in the field of biotechnology.

References:
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