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Moving Beyond Excel to Purpose-Built Applications for Speedier Study Startup

WHITEPAPER

This white paper details why continued reliance on Excel for managing tasks for global clinical trials can thwart successful execution. Oracle Health Sciences purpose-built solutions, designed to create study startup workflows and metrics, are described as vital alternatives for gathering actionable information that can highlight and prevent bottlenecks, an intractable problem.

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Executive Summary

Excel was not designed to collect and analyze clinical trial data. It lacks project management capability, yet its extensive use persists.

Technology for study startup, one of the most underperforming aspects of clinical trials, has advanced to the point that current solutions can do what Excel never will - automatically trigger workflows as a clinical trial unfolds. With Oracle Health Sciences study startup solutions, it is possible to set and track milestones, improve communications among partners, act as a central repository for study documents, and integrate the flow of information from various data sources in a compliant manner.

Leveraging Project Management Capabilities

With a proliferation of cloud-based technologies already improving clinical trial performance, it is surprising that Excel spreadsheets are still a predominant force. Research dating back to the late 1990s and early 2000s documents that Excel was not designed to collect and analyze clinical trial data[1,2] and it lacks project management capability, yet its extensive use persists.

Stakeholders are familiar with Excel and find it easy to use, but in today's hyper-competitive clinical trials marketplace, Excel has been pushed beyond its limits. Fortunately, technology for study startup, one of the most underperforming aspects of clinical trials, has advanced to the point that current solutions can do what Excel never will—automatically trigger workflows as a clinical trial unfolds. It has also become possible to set and track milestones, improve communications among partners, act as a central repository for study documents, and integrate the flow of information from various data sources in a compliant manner—functions that are critical to successful site activation process as clinical trials become more global and complex.

This white paper details why continued reliance on Excel for managing tasks for global clinical trials can thwart successful execution. Oracle Health Sciences Activate Cloud Service and Oracle Health Sciences Analyze Cloud Service, Oracle Health Sciences' comprehensive purpose-built solutions, designed to create study startup workflows and metrics, are described as vital alternatives for gathering actionable information that can highlight and prevent bottlenecks, an intractable problem. Overall, both solutions work together to accelerate this challenging piece of the clinical trials process.

> " Much of the inefficiency stems from too many study startup tasks still rooted in paper-based or spreadsheet methodology, instead of wider use of technologies that enables tracking of activity."

What's Wrong With Excel for Study Startup?

Technology has been a disruptive force in the clinical trials enterprise, ranging from entry of clinical trial data via electronic data capture (EDC) or eSource to managing study documents in the electronic trial master file (eTMF). But, until recently, the study startup portion of clinical trials has not benefited from innovation, essentially remaining manual or heavily rooted in Excel spreadsheets, causing this complex process to seriously underperform.

For example, a survey on clinical trial budgeting, a standard study startup function, found that 57% of respondents claim to still be building their study budgets in Excel, and as a result, 65% reported that the review and revision cycle for a single study was taking more than five weeks.[4] Nearly one-third (31%) required more than nine weeks. This slow approach contributes to the estimated mean clinical trial development time of 6.7 years, translating into lost revenue of approximately $600,000 - $8 million per day because a drug has not yet come to market.[5]

This finding is part of a larger picture, with research from the Tufts Center for the Study of Drug Development (CSDD) indicating that it takes eight months to move from the pre-visit phase to site initiation.[6] Similarly, a 2014 report from the US Department of Health and Human Services cites the study startup process as sluggish due to sponsor-imposed barriers, such as delays in site initiation, complex internal review methods,[7] insufficient recruitment planning, and poor case report form design.[8] Much of the inefficiency stems from too many study startup tasks still rooted in paper-based or spreadsheet methodology, instead of wider use of technologies that enables tracking of activity and viewing of trends in real-time and at lower cost.

Excel contributes to study startup inefficiency with its lack of critical features needed for operational excellence as studies become more global [9,3] (Chart 1). Challenges include:

Challenges with Excel

1. Lack of project management capabilities
2. Lack of regulatory compliance
3. Unsecured data
4. Manual entry is error prone
5. Lack of version control or centralization
6. Inefficient workflows
7. Lack of collaboration and communication among stakeholders
8. Insufficient oversight and aid in partner selection
9. Decentralization
10. Inability to generate real-time status reports

Chart 1

1. Lack of project management capabilities

A major shortcoming of Excel is that it does not have the basic functionality needed to help manage projects, such as:

- Defining and tracking study milestones
- Automatically triggering activities to begin as others are completed
- Creating flexible charts, dashboards, real-time data exploration, and ability to handle massive volumes of data
- Assigning risk triggers with milestone projections (risk mitigation)
- Recording the completion of activities

2. Lack of regulatory compliance

The Food and Drug Administration (FDA) requires compliance with 21 CFR Part 11, the Electronic Records; Electronic Signatures regulation, which includes traceability of any and all changes that are made to the data. As stated in the Part 11 discussion about Audit Trail requirements, individuals must comply with all applicable requirements related to documentation of date, time, or sequencing of events, as well as requirements for ensuring that changes to records do not obscure previous entries.[10] This level of audit trail transparency is not available in Excel. If someone changes a value in a spreadsheet, the history of who made the change, the date and time the change was made, the old and new values entered, and the reason why the change was made—cannot be determined.

3. Unsecured data

Excel does not have the ability to handle role assignments, so it cannot provide insight into who has access to the data and when data were accessed. Spreadsheets have minimal permission controls when it comes to restricting access for multiple users. This lack of protection can lead to data manipulation, which compromises data integrity.

4. Manual entry is error prone

Data entry is cumbersome and error prone, and while Excel contains some basic data validation functionality associated with various formulae, data entry errors can still easily occur and go unnoticed. Even though using Excel can save time upfront due to staff familiarity with the program, and therefore, requiring little training, a significant amount of time can be wasted consolidating files and checking for errors later on.

5. Lack of version control or centralization

Who has the master copy? The latest copy? Where is it and is that version compatible with the various stakeholders' systems? Spreadsheets can be difficult to locate if they are saved to several files and folders. Oftentimes, important information is scattered and multiple copies of a document are created, making it unclear as to which is the latest copy.

6. Inefficient workflows

Spreadsheets are not sophisticated enough to ensure organizations are in compliance with their standard operating procedures (SOPs) and/or regulatory requirements for documentation management and workflows. At best, Excel is a manual tracker of documentation status. That status is then communicated via email, phone, and meetings, meaning real-time status of site activity is seldom available or accurate.

7. Lack of collaboration and communication among stakeholders

Clinical trials are routinely outsourced to contract research organizations (CROs)[11] and conducted at sites across the world. As a result, research has become a highly collaborative business, and it is critical that research organizations have the tools to ensure that communication among stakeholders is facilitated. Excel lacks this capability.

8. Insufficient oversight and aid in partner selection

The size, scope, and complexity of clinical trials and their associated costs are sufficient justification to warrant a degree of oversight. Research organizations working with numerous partners often find it challenging to monitor and select the right partners, and Excel offers little help. When selecting research partners, it is essential to consider a number of factors, such as past performance, skills and competencies, and caliber of the site's patient database. Using Excel to track site quality makes it very difficult to keep this critical information up-to-date, especially for large global studies. Similarly, on-going monitoring is tough to maintain via this method.

The complexity of oversight is particularly evident when working with multiple CROs on concurrent studies. The correlation of results from CROs using different reporting formats makes immediate oversight difficult. Specifically, various CROs' detailed reporting often masks risk identification and is based on each CRO's siloed custom Excel template and processes, making the consolidated data from all of these templates inaccurate, inconsistent, and outdated.

The end result is a lack of transparency into activity progress and delayed decision-making.

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9. Decentralization

By its very nature, the use of Excel to manage clinical research forces all research activities to be decentralized. An organization might use a database to manage patients, Excel to track finances and visit completions, a scheduling application to track appointments, and a third party to manage patient recruitment. Tracking all of these research activities across different applications is highly inefficient, and leaves the door open for mistakes and miscommunication amongst staff.

10. Inability to generate real-time status reports

Using Excel to manually enter data is time consuming and can lead to input errors. Also, reports have to be made manually and updated regularly, and one mistake can derail the metrics for an entire study. As a result, the availability of accurate real-time information for permissioned stakeholders is a near impossibility.

Innovate With Purpose-Built Technology

With all of the clinical trial shortfalls posed by Excel, there is a growing acceptance that smart workflow technologies are a better choice for streamlining the numerous study startup processes, and ultimately shrinking timelines and improving data quality. Schimanski and Kieronski stated that there is a movement away from the tedious job of compiling Excel spreadsheets in favor of technology that allows for the reporting of real-time data.[12] Others add that it is the responsibility of CROs and sponsors to utilize state-of-the art technologies to better execute study startup tasks, such as communication among stakeholders, distribution of questionnaires to investigators electronically,[13] contracts and budgeting, and patient enrollment. With these tools, study teams can access real-time status updates and quickly identify bottlenecks—actions that are not available with Excel.

Importantly, expanding use of technology aligns with a call to action from a widely distributed Discussion Paper by Kramer and Schulman, which highlighted the critical need to transform the business model used to conduct clinical research.[14] They state that a concerted multi-stakeholder effort is essential to addressing the adoption of technology. Furthermore, they claim that the economic opportunities from technology have been blunted by legacy costs and processes shaped by previous generations of processes (Chart 2). Although Excel is not mentioned specifically, it is a legacy methodology that does not offer the efficiencies of cloud-based technology, such as leveraging the value of integrated solutions.

Oracle Health Sciences, a provider of cloud-based study startup software for the global life sciences industry, has successfully delivered to the marketplace two purpose-built solutions that accelerate the study startup process. Activate provides automated workflow and project management features that do not exist in Excel. Analyze provides intelligence, presenting timely status updates across studies, and insights to streamline operational processes through visually rich analytics and dashboards, utilizing real-time metrics. This is in stark contrast to Excel, whereby users must manually recreate metrics, rendering them out-of-date.

Transforming Clinical Research With Technology

While the technology for gathering clinical data for research has evolved over time, the business model supporting this technology clearly has not evolved with each stage of technology transformation. As a result, the potential economic opportunities from technology have been absorbed by legacy costs and processes shaped by previous generations of the business model for clinical research. These legacy costs exist in the sponsor organizations, in the regulatory environment, in the provider environment, and in the clinical research organizations themselves.

Chart 2

About Activate

Activate is revolutionizing how stakeholders collect, handle, and parse the massive volumes of data generated by study startup activities. It is also the missing piece in the puzzle of clinical trial solutions, as it integrates data from other cloud-based solutions such as EDC, the clinical trial management system (CTMS), and eTMF—the "clinical stack"—and offers seamless sharing and visibility of study startup documents in real-time across the globe. This integration is possible through the use of an application program interface, which optimizes the flow of data among various integrated components.

Accessed through a dashboard, Activate is workflow-based, allowing study teams to discover meaningful patterns in the data for tasks such as status of packages for the institutional review board, patient enrollment success, and receipt of study drug. They can also experience better collaboration with sites, improve business processes, and avoid redundancies. Risk can be continuously tracked and mitigation strategies can be adapted much earlier in the decision-making cycle. Moreover, reports are fully automated, requiring minimal, if any, human intervention, ensuring accurate, real-time data sets that help management teams make fast, reliable decisions. For compliance, Activate's smart workflows standardize processes and guide study teams to complete and track the specific documents and tasks required for any site, country, or study based on regulatory requirements and a company's standard operating procedures (SOPs).

Unlike Excel, the features of Activate allow the project management team to drive discussions and decision-making on bottlenecks impacting site activation. In particular, Activate records when each task starts and completes. Time is not wasted charting data and compiling status updates, a practice that is typical with Excel. Also, real-time alerts help decision makers intervene immediately or before a major setback has occurred, instead of after the fact. Since in conventional study startup, intervention usually happens after an issue has occurred, when it is too late to proactively avoid the problem. Chart 3 summarizes key benefits of Activate.

Key Benefits of Activate

- Manages alerts
- Manages study team members
- Manages milestones
- Views of global study status
- Can access study data anytime, anywhere
- Drives data-based business decisions
- Improves collaboration with sites
- Exchanges documents securely
- Consolidates information in one place
- Predicts study progress more accurately
- Avoids redundant processes

Chart 3

About Analyze

Analyze is a purpose-built reporting tool that allows study team members to aggregate data and customize graphs and other data visualizations. The tool also creates ad-hoc reports using data analytics to aid stakeholders in viewing study status of multiple studies. This functionality helps identify bottlenecks across protocols by evaluating completion of documents on the critical path, such as site contracts or an informed consent form, and tracks cycle times across individual sites as well as countries. If a report signals a trend toward longer completion time for contracts, for example, the sponsor or CRO can act quickly to steer lagging sites back on track, or consider adding new sites.

Standard reports are supplemented with customized ones that can be shared with team members via a single click and an e-mail address to authorize those team members to see a dashboard of the reports. They also provide visualizations as they drill down into the details of document and submission status, milestone status and more (Chart 4). These capabilities are not available with Excel.

As shown in Figure 1, Analyze makes it possible to identify performance risks across global study deployment by monitoring key metrics.

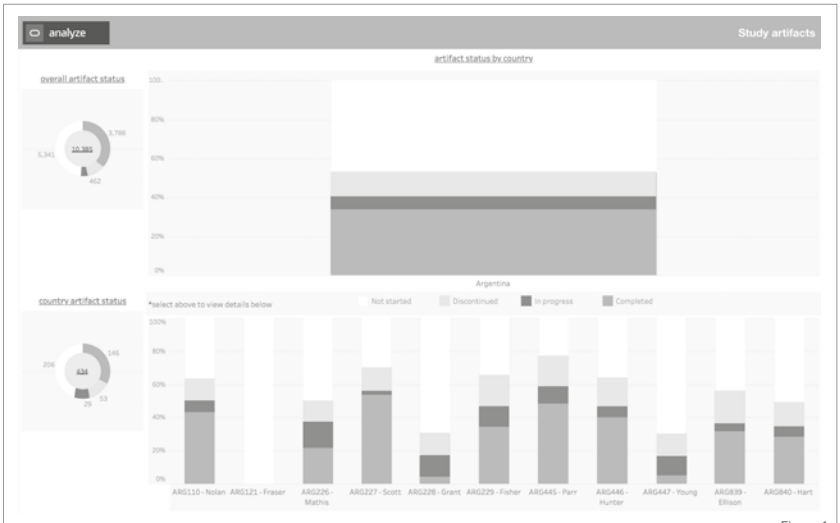

Figure 1

As shown in Figure 2, Analyze makes it possible for stakeholders to manage the overall status of a sponsor's distributed portfolio based on progress towards full activation of sites and milestone completion.

Key Benefits of Analyze

- Create data visualizations across multiple trials and partners
- Provide actionable status information
- Replace need for manual preparation of routine reports
- Quantify the clinical research team's performance
- Interact with data, run ad-hoc reports
- Keep study startup on track and within budget by tracking cycle-time metrics and key performance indicators
- Expedite collaboration with global study teams
- Proactively support risk identification
- Encourage high-transparency partnerships

Chart 4

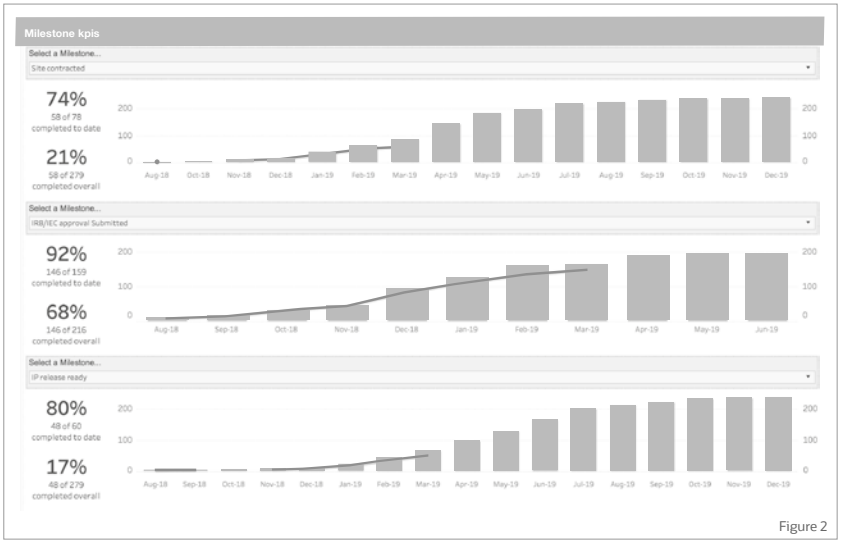

Figure 2

Time for Purpose-Built Applications

Stakeholders facing intractable problems related to study startup are looking beyond Excel to purpose-built applications designed to strengthen adherence to timelines and budgets while improving data quality. Activate's workflow-based functionality and Analyze's data analytics platform make this possible with their compliant project management capabilities. This entails enabling secure communication among partners, as well as offering reporting capabilities, tracking, and study oversight, all meant to speed study teams through activation. And as study startup technology emerges as standard procedure, **stakeholders stand to benefit from a much improved process for what has historically been a key bottleneck.**

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About Oracle Health Sciences

As a leader in Life Sciences cloud technology, Oracle Health Sciences' Clinical One and Safety One are trusted globally by professionals in both large and emerging companies engaged in clinical research and pharmacovigilance. With over 20 years' experience, Oracle Health Sciences is committed to supporting clinical development, delivering innovation to accelerate advancements, and empowering the Life Sciences industry to improve patient outcomes. *Oracle Health Sciences. For life.*

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