

Essential guide to Trial Master File (TMF) migrations

From chaos to order in three steps

Knowledge and planning are the keys to a successful TMF migration

This guide is designed to help you navigate the most important part of any TMF migration: project scoping and planning. Once you have a firm grasp of the three key steps listed in this brief, you will find it much easier to manage a successful TMF migration—whether performed internally or outsourced to a provider.

There's no question that migrating a Trial Master File is a complex undertaking. Whether converting a paper TMF, digital documents, or a hybrid Trial Master File into an electronic TMF (eTMF), there are a multitude of tasks to be completed—and completed correctly in order to meet the requirements of regulatory agencies.

Fortunately, there are new tools available that make migrating your Trial Master File a far more efficient and accurate process, such as the latest version of the CDISC TMF Reference Model. In addition, industry best practices developed over decades, from risk-based quality review to streamlined data reconciliation, help to achieve a successful migration.

Note: These steps are drawn from Cencora's global experience performing effective TMF migration activity for hundreds of studies, for organizations ranging from small biotechs to the industry's largest sponsors, and for contract research organizations (CROs). We have distilled numerous standard operating procedures (SOPs), checklists, and processes from our proven methodology into the following TMF migration overview that will help you determine your next steps.

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Step 1: Understand the big picture

As with any highly complex project, it's critical to first gain a complete understanding of the project's overall scope. At a high level, the overall migration process will consist of the elements shown in Figure 1.

Figure 1. The TMF migration process and key activities



Consider these key questions:

1. What is the timeline for this migration? Is the timeline being driven by business considerations (such as a pending acquisition or New Drug Application)?
2. Will we be migrating an individual study or a group of studies?
3. Is the study or group of studies open, closed, or a mix?
4. Does the study include unblinded documents?
5. What are the project deliverables?

Question 3 is extremely important to know upfront – it dictate your approach to the migration. Closed studies can present more difficulty when tracking down missing information (for example, sites may have been disbanded).

Migrating open studies, however, adds several layers of complexity. You will need to freeze the source system at a fixed timepoint to prevent new documents from being uploaded; delineate periods of time to complete quality control (QC); close out any queries relating to documents in the source system; and freeze the source system completely. Finally, you will have to decide how to manage incoming new documents once they can no longer go into the source system. Even so, the risk of duplicate documents increases—and timelines are compressed—since you do not want to have the TMF of a live study in an inaccessible state for long.

Project deliverables (besides the actual migrated Trial Master File) should include detailed reconciliation evidence, which compares the final project output with the predicted values of filing structure locations and metadata. Since the detail can be daunting, it is helpful to also have a clear and concise summary of this report. Meanwhile, the data migration report will verify that you followed the migration plan and explain the reasons behind any deviations.



Together with your final migration plan, these deliverables provide a sound foundation for explaining and justifying your TMF migration to an inspector in the future. It is best practice to also save these documents into the migrated TMF so the migration record is part of the new Trial Master File.

Step 2: Know the source and destination systems

A key part of TMF migration planning is having a solid understanding of the characteristics of the source and destination systems. Each study will typically have a single source and a single destination, but that's not always the case.

Ask these key questions to help build an effective migration plan:

1. What are the names/vendors of the source and destination systems?
2. Who are the originators/holders of each system: the trial sponsor, a single CRO, or multiple CROs?
3. What transfer methods/media will be utilized: secure file share, USB drives, DVDs, or a mix?
4. What are the source and destination filing structures?
 - a. Is there an index? How complete is it?
 - b. What is the index format or formats?
 - c. Does the index link to the files in an unambiguous manner?
 - d. Do the systems utilize the TMF Reference Model? If yes, what version?
 - e. Are there subartifacts present?
 - f. Do the index entries match the files supplied?
 - g. Is there more than one language utilized in the index?
 - h. What is the naming logic for sites and countries?
 - i. What are the general metadata requirements and availability?

The TMF index is possibly the most critical component of a successful migration. It's not enough to simply check **"index"** off the list and move on without truly understanding the nature of the index.

To help develop an effective migration plan, assess the index for the following:

- No index (must be created from scratch, adding significant time and effort)
- Minimal information in the index (similar challenges to having no index, although having anything in place helps to derive content from where the files are stored)
- Multiple index formats such as HTML, XML, or Excel (the most common), or a hybrid (each format adds its own challenges in deriving key information)

Step 3: Gain a complete understanding of the content you are migrating

The TMF content you're migrating is obviously the core of the project; after all, these are the essential documents of the Trial Master File that allow regulatory agencies to recreate the **"story"** of the trial.

When we use **"content"** in the context of a migration project, however, we also are referring to the makeup of that story. Your content inventory for migration should include:

Source document formats (paper, electronic, or a mix; renditions, originals, or a mix)

Having paper as the primary or only source document format makes TMF migration much more resource-intensive, as it needs to be digitized for any eTMF system. Not only does this require a certified scanning process to be compliant—the files then need to be individually assessed and indexed.

File formats (single PDF, container PDFs, ZIP files, Excel, email, image files, or a mix)

File formats can also make a migration relatively straightforward or much more complicated. It's important to know all the file formats that will be utilized during the migration, since some formats can lose critical information in different ways. What we call **"container"** formats are becoming more common, and they create significant challenges when migrating a TMF.

Metadata formats (Excel, XML, CSV, HTML, or a mix)

Evaluating the metadata means looking at its quality and consistency and understanding if there is enough metadata to satisfy the requirements of the destination system. Is it available in an existing index? Knowing whether the metadata is sufficient or requires augmentation is crucial to scoping the resources required during a TMF migration.

Audit trail formats (Excel, XML, PDF, or a mix)

Due to recent regulatory updates, it is now critical to get audit content from the source system (or systems) and link that back to documents. Currently, there is no standard for audit trails; we see a mixture of formats depending on the source system.

Conclusion

As you have seen, migrating a Trial Master File is not simple— but with the right knowledge and experience, you can ease the burden on your organization and achieve a successful migration.

At Cencora, our experience conducting hundreds of TMF migrations, including all manner of source and destination environments, has enabled us to develop a set of core best practices, SOPs, and purpose-built technologies that are the key to a successful migration.

Have any questions about TMF migration? [Visit us here](#)

The AI-powered eTMF software ensures compliance with global privacy laws by implementing robust data-processing controls, including encryption, access restrictions, and automated data minimization. It supports regulatory requirements by maintaining audit trails, enabling lawful data transfers, and enforcing data retention policies aligned with jurisdictional mandates. The system's AI-driven functionalities enhance efficiency while upholding principles of transparency and purpose limitation. Continuous monitoring and compliance updates ensure adherence to evolving privacy regulations across key global markets.