Medidata CTMS

2014.4.0

Software Overview

Document Version 1.0

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Revision History

Version	Date	Changed by	Description of Changes
1.0	27 Oct 2014	Tom Creswell Systems Business Analyst	Original Release for 2014.4.0

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1 Introduction

1.1 Purpose

Medidata Clinical Trial Management System is a cloud-based application comprised of multiple modules that can be implemented either as standalones, or as an integrated solution. This document serves as a software overview and describes the components that make up the system.

1.2 Business Objectives

Medidata CTMS is a cloud-based application designed to provide an enhanced user experience for the provision of clinical trial information to clinical teams and management quickly and easily, while better supporting the management of complex projects/protocols/trials.

Medidata CTMS enables Sponsors/CRO's to leverage centrally stored information, providing greater work flow efficiencies and reducing the administrative burden in having to enter information multiple times into Project Management, finance, tracking, or status documents.

In streamlining these administrative tasks and providing users access to up-to-date information, the CTMS enables users to focus on the really important tasks associated with running Clinical Trials.

As the solution is web-based, enabling users to access the system from anywhere at any time.

The benefits of Medidata CTMS are:

- Reduce cost via process optimisation, maximising Future General & Administration growth
- Increase business flexibility
- Allow organizational scalability
- Provision of an integrated real-time view of Clinical Trial information
- Improve quality via common business practices and standardized record keeping
- Reduce risk by meeting regulatory compliance

1.3 Applicable Documents

The documents listed below provide details of features previously developed for CTMS.

Code	Title	Version
RN	Medidata CTMS 2013.1.0 Release Notes	1
RN	Medidata CTMS 2013.1.0.1 Release Notes	1
RN	Medidata CTMS 2013.1.0.2 Release Notes	2
RN	Medidata CTMS 2013.1.0.3 Release Notes	2
RN	Medidata CTMS 2013.1.0.4 Release Notes	1
RN	Medidata CTMS 2013.1.1 Release Notes	1
RN	Medidata CTMS 2013.1.1.1 Release Notes	1
RN	Medidata CTMS 2013.1.1.2 Release Notes	1

RN	Medidata CTMS 2013.1.1.3 Release Notes	1
RN	Medidata CTMS 2013.2.0 Release Notes	1
DD	Medidata CTMS 2013.2.0 Data Dictionary	1
RN	Medidata CTMS 2013.2.0.1 Release Notes	2
RN	Medidata CTMS 2013.3.0 Release Notes	1
DD	Medidata CTMS 2013.3.0 Data Dictionary	1
RN	Medidata CTMS 2013.3.0.1 Release Notes	1
RN	Medidata CTMS 2013.3.0.2 Release Notes	2
RN	Medidata CTMS 2014.1.0 Release Notes	1
DD	Medidata CTMS 2014.1.0 Data Dictionary	1
UG	Medidata CTMS Core CTMS User Guide (ENG)	1
RN	Medidata CTMS 2014.2.0 Release Notes	1
DD	Medidata CTMS 2014.2.0 Data Dictionary	1
RN	Medidata CTMS 2014.3.0 Release Notes	1
DD	Medidata CTMS 2014.3.0 Data Dictionary	1

2 Requirements

2.1 Hardware Requirements

CTMS uses the Medidata Cloud deployment, which includes all server architecture and hardware configurations.

Please see Hardware, Services and Software Specifications (Configurable Infrastructure Deployment) for Hardware and Software Specifications.

2.2 Software Requirements

CTMS requires a Web Browser – (Internet Explorer v8 (IE8) or greater, Chrome, Firefox)

Additional software requirements include the following:

- Adobe® Flash Player 7 or higher is required for viewing of eLearning content.
- Adobe® Reader 7 or higher is required for viewing of PDF format content.

2.3 Browser Compatibility

Medidata CTMS does not support use of the browser's navigation buttons; all navigation should be done with the Medidata CTMS application controls.

The Medidata platform supports any browser that is HTML 4, HTML 5, and CSS2 compliant. Browsers also need to have JavaScript enabled.

Note: For Jasper Adhoc Reports, the following products are also needed with the web browsers:

- Adobe Acrobat® 7 or higher
- Adobe Flash® 8 or higher (Required for rendering of the Professional Charts, Maps, and Widget components in reports)

3 Functional Summary

3.1 Core Trial Management

Medidata CTMS Core Trial Management provides management and tracking of key clinical information from Studies through to Subjects. The module incorporates activity management enabling the user to track timed deliverables from Study through to Subject based deliverables. Study activities include deliverables such as receipt of insurance certificate, receipt of final protocol; Site activities including monitoring visits, regulatory documents; whilst Subject activities include Subject specific procedures or visits such as MRI scans and bloods for example. Templates are used to manage these activities, enabling quick and easy re-use of activities defined by you. The Core Trials Management functionality provides the key structure to manage a clinical trial. Adding a Study using pre-defined templates that are specific to your organization enable you to have a Study up and running in hours, not days.

Typically a Study will include:

- Management and tracking of study actions, such as receipt of final protocol, printing of CRF's, etc.
- Study status notes providing a central point for the recording of notes relating to the study status, project management information, etc.
- Track staff, contractors and customer contacts who are assigned to the study.
- Central labs used for the study including key lab information such as CAP, CLIA, normal ranges.

Sites are the facilities where the studies are conducted. The system provides the following tools for each site:

- Tracking of regulatory documents.
- Investigator staff and contact details.
- Addresses for the site.
- SMO's with a relationship to the site.
- Tracking of monitoring visits.
- Local labs associated with the site and supporting information.
- Pre-populated FDA1572 reports.
- Milestone Tracking

Enrollment information is entered against the site, tracking the following information:

- Subject information including Subject status, comments and key enrollment dates.
- Screen fail or discontinuation information.
- Subject visit information.
- Subject activities such as procedures, etc. The CTMS uses a series of templates to support quality and improve the set-up time. Activity templates are used to predefine a set of activities. Templates enforce standardization with flexibility and save re-inventing activities each time a new study or site is set up. Once you have applied a template to a site, you can add, delete and modify the activities at that site. Templates can include the following:
    - Study Activity: CRF printing, drafting of a protocol, etc.

- Site: monitoring visits, regulatory documents, etc.
- Site Contact: investigator CV, medical license or financial disclosure
- Subject: Subject visits, subject procedures (MUGA scan, bloods, etc.). The Core module includes standard reports which cover the following areas:
  - Study activities.
  - Monitoring visit tracking.
  - Regulatory document tracking.
  - Study contacts.
  - Study enrollment tracking.
  - Subject visit analysis.
  - Subject Screen failure.
  - Subject Discontinued information.
  - Study, Country, Site Enrollment Summary Report

- There are a number of cross study reports providing summarized information on the study, country and site level. These reports can be output to various formats including PDF, RTF, CSV, XLS and Open Document Format. In addition to these reports the solution has standard exports to enable the extraction of data or mail merging for analysis in other tools, such as spreadsheets, other reporting tools, etc.

3.2 Milestones

3.2.1 Study Milestones

Study milestones record and track agreed milestones with either the sponsor or internally within the organization. Once milestones are entered they provide the user with the percentage complete, forecast date of completion and completion date for each milestone. In addition, milestones can be integrated with reports allowing for the reporting of key milestones in cross study management reports. In addition, integration to Microsoft Project provides the ability to send and receive key milestones with externally held project plans.

3.2.2 Standard Milestones

Standard Milestones enable users to record and track specific key milestones throughout the site recruitment, subject enrollment and clinical study process. These milestones are available out of the box with the CTMS providing standards in reporting across the multiple layers of a clinical study (Study, Country, Site) using common terminology to minimise manual reconciliation. Users now have the ability to track the original baseline 'Planned' date, the current plan 'Expected' date and the 'Actual' completed date of the milestone.

The 'Expected' dates entered at the lowest level (Site) trigger a workflow to populate the 'Expected' dates at Country and Study level providing an automated roll-up for key milestones. The 'Actual' date is calculated by the system through workflows using data that is being entered directly into Medidata CTMS or data received through the integration with Medidata Rave.

3.3 Country Management

Country Management enables Trial Managers to plan and manage countries for global studies at the Country level. A single country view per study allows the trial managers to review the progress made by the trial in a country as well as providing access to country level functions.

The planning function allows the Global Trial Manager to set baseline site recruitment and subject enrollment numbers at the start of a trial, which then facilitates the Local Trial Manager to track and re-forecast the numbers against actual recruitment figures.

The site management function allows the Trial Manager to view sites within a country and follow their progress. Additionally there is facility to manage the country internal staff and provide country level access via country membership.

3.4 Country Planning and Resource Assignment

Country Planning provides the ability to plan studies that run in multiple countries. It supports the site and subject enrollment counts for each country in order to track the recruitment activities against all countries for a study. Country planning data will be entered during the study planning phase of the study and the actual data will be rolled up through subject/site status changes when data is available from another system which drives completion in CTMS (e.g., EDC data feeds subject statuses and even site "Initiating "status) or, statuses that can be configured to be manually entered if no data is available directly from the workflow. A country planning view also provides a summary view where a user can see the progress of all countries site and subject recruitment counts against the planned numbers for a study.

Resources can be assigned at the study, county and site level for all roles that are responsible for managing a study at these levels. These roles receive emails alerts for visit report review or approval once a Site Monitor or CRA has submitted the visit report.

3.5 Auto Rollup and Rolldown of Standard Statuses

Standard statuses are now available for study, country, site and subject, allowing for consistent reporting across studies. The standard status is only available as part of creation or search process for a study, country, site and subject. The ordinary statuses behave more like a refined set of status for the standard status. A cascade relationship exists between the two statuses.

Auto rollup and rolldown of standard statuses automatically sets the standard status for Study / Country / Site based on events that take place at site & subject level. The benefit of this feature is to ensure that statuses reflect the most up-to-date progress made by the trial at study / country / site or subject level. Some examples of these events are a site getting qualified, first subject screened, or a site getting closed. These events trigger standard status change, i.e. rollup from a subject to site to country to study. Inversely there are events that can rolldown status change, i.e. when a study is put on hold, country & sites statuses update accordingly.

3.6 Ethics

The Ethics module assists your organization in managing the submission to central and local IRBs, ethics committees or agencies. The module provides a tool to track the relevant IRB and future meetings to ensure that you have your package ready and delivered in time for the meeting. The tool provides Project Managers and monitors a way in which to manage and track the process.

3.7 Predicted Recruitment

Entering agreed recruitment milestones enables the sponsor and CRO to better track forecast against actual recruitment by date range. Recruitment goals are entered by date enabling you to report cumulative forecast against actual; the reports include charts further enhancing the

analysis of study recruitment. Forecasts can be entered by study, country and site and reported on each accordingly. Integration to EDC further minimizes the effort in managing enrollment. The module is user-configurable, enabling specific recruitment types to be measured against; such as number of subjects screened, randomized, completed, etc.

3.8 Attachments

This functionality enables the storage of clinical visit reports and other site and protocol specific documents; for example scanned certificates. Completed visit reports are attached against a site, enabling improved management of study documents. The documents can be categorized based on their source and status, configurable by your organization; for example, regulatory documents, licenses, etc. The status of the document could include, Draft 1, Draft 2, Final, etc. The module enables access to key attachments from any location when using this application.

3.9 Monitoring Reports

The Monitoring Reports module provides the ability to author, review and publish monitoring reports directly in this application. The monitoring reports include checklists, notes, action items and report submission tracking. Used in conjunction with the offline module, users are able to enter the monitoring report at the site, synchronize and submit the report when they next have an Internet connection. The user never need touch a word processing application again for visit reports.

Monitoring Reports are integrated with Deviations, SAEs, CRFs and Documents providing a method to monitor these items and allowing them to be rendered automatically within the monitoring report. Data entered into the monitoring report is shared with the rest of the system. Action items entered into one report are available in all other reports until they are closed; actions can be closed outside of visits. The configurable eSignature sub-report can be included within visit reports, enabling auditable visit report statuses fulfilling CFR part 21 compliance.

User configurable monitoring report templates enable you to preconfigure various report questions and notes based on your SOP's. This provides the ability to provide templates for site evaluation visits, monitoring visits and site close out visits, enforcing SOP process and making it easier for your staff to complete these documents. Monitoring report action lists enable monitors to create and manage actions resulting from a visit. Monitoring reports also provide the ability to manage the submission and approval of these reports from monitor through to project manager with supporting e-mail triggers to ensure that you meet your SOP submission deadlines. PMs or study coordinators are able to review comments prior to the approval process of the Visit Report.

Once approved, the final Monitoring Visit Reports can be automatically transferred to the Veeva Vault eTMF, should this integration be activated on your study. For more details, refer to section **3.19.7 Veeva Vault eTMF Integration**.

The module also supports your staff in completing visit confirmation letters and follow-up letters by removing the need to copy and paste addresses and action items, the system does this automatically, further upholding a vision of enter once, use many times. User configurable letter templates allow you to preconfigure the letter style and text based on your company preferences. These configurable templates are available for the standard confirmation and follow-up letter types.

Monitoring reports can be output in Adobe Acrobat for printing so that the report can be printed

in a hard-copy format, or e-mailed without change.

Recording monitoring report data within this application enables reporting at a site level against checklist data, identifying potential issues that might occur at a site. Additionally, the data will highlight efficient sites therefore enabling you to focus your monitoring activities. Study manager's customers using Monitoring Reports have experienced up to a 40% gain in productivity compared with using traditional word processing documents.

3.10 Centralized Findings and Action Items

The Centralized Finding module provides the ability to manage findings and action items at various stages during the drug trial process. This solution will benefit companies that manage projects at multiple locations. The ability to centrally view findings provides monitors and managers of a compound, or client managers (CROs) a way to review issues across several protocols and to view trends in findings or actions, allowing them to then take appropriate corrective actions e.g. Training of teams or change in processes.

3.11 eSignatures

The eSignatures tool provides a full online review, revision and approval process that negates wet-ink signatures on paper. The final report is stored as a locked Adobe PDF file within the system.

3.12 Offline Client

The Offline Client module provides a method for users to access their data in the application when not connected to the Internet. The offline client has the same full functionality as the online application, delivered within a secure offline mode. In offline mode, records are not locked on the server; the application handles simultaneous changes using conflict management. Users have the ability to enter data when and where they want, synchronizing the data quickly and efficiently when next connecting to the Internet. For example, users can enter monitoring reports, subject and timesheet data into the system, enabling extended working whilst on the move.

3.13 CRF Tracking

CRF Tracking is a template-based system that enables the creation of CRF's books, pages and NCR pages, automatically assigning them against subject and subject visits within a study. The granularity of this solution aids organizations in tracking to an NCR page level, although this is configurable. The solution also supports RMI studies that have nested visits or repeating groups of visits. Study, site and subject CRF tracking reports provide visibility on the status of these critical documents. Transmittal log reports are also provided to optimize the process of issuing, collecting and retrieving CRF's. In using templates this module provides the ability to reuse similar CRF's for other studies. The module is highly configurable enabling the user to record the number and color of NCR pages, the number of CRF pages and unique numbers for NCR and CRF pages. Integration into CDMS, EDC and the Data Query management module can further optimize the process and provide even greater reporting on CRF status within the CTMS.

3.14 Data Query Management

The Data Query Management tool enables the tracking of data queries against studies, sites and subjects, providing a status of where a particular data query is during the process. The module supports the generation of data query transmittal forms during the various stages of the data

query resolution process, enabling single data entry and output of transmittal reports, further reducing the effort in managing data queries.

3.15 Clinical Payments

Clinical Payments record finance transactions, either automatically or on an ad hoc basis. Automatic transactions can be configured to generate financial transactions based on activities. For example a subject visit or a subject activity (e.g. clinical procedure) would generate a site payment. Automatic finance transactions can be associated with protocols, sites and subjects. The module provides an approval process enabling monitor, project manager and project director approval of finance transactions, configured to your process.

The Clinical Payment module allows your finance group to enter payment details relating to the transactions, such as payment date and payment reference, therefore allowing clinical staff to review payment history for protocols, sites or subjects. The module provides export of finance data through comma delimited (CSV), Excel (XLS) or XML formats.

Used in conjunction with the Finance Integration module this solution can provide finance data direct into your finance system, enabling automation of payment events. With the write back, your finance system can populate the Payments module with payment specific details, such as payment date, check number, etc.

To cater for situations where costs are approved / verified in an external system or where the approval might only be needed at the payment level, CTMS has introduced the ability to bypass one or both of the approval steps in the system for the auto-generated costs. Automatic approval of auto-generated event costs (such as costs for subject visits) can be enabled through configuration so that costs are marked as approved at the time they are generated.

The Clinical Payments can also be triggered through data received from Medidata Rave for completed visits and/or procedures.

3.15.1 Budget to Payments (with Medidata Grants Manager)

Medidata Grants Manager templates can be imported to CTMS, reducing the time it takes to setup CTMS Payments.

Importing the Site / Subject Activity templates from Grants Manager allows the automatic generation of the “Site Activity” and “Subject Activity (Subject Visits) Activity” template data in CTMS.

Importing "Negotiated Costs" from Grants Manger allows the automatic setup of costs in CTMS as well as the ability to import cost amendments that are negotiated through Grants Manager.

3.16 Serious Adverse Event (SAE) Tracking

The SAE tracking module provides the ability to enter and track SAE’s that occur on a study by site for each subject. Nature of event, causality, severity and other such fields provide the ability for the clinical staff to maintain a record of events as they occur. SAE information is accessed through Monitoring reports providing the ability to monitor SAEs. In addition to SAE tracking reports, the system has reports showing SAEs monitored and not monitored.

3.17 Subject Deviations

Subject Deviations provides the ability to track deviations by subject. The module uses templates that are re-usable from study to study providing a template(s) of standard deviations. When assigned they control the type of deviation that can be recorded for a particular study. Using templates provides the ability to quickly set-up a study with the relevant deviations without re-work.

3.18 Timesheet and Expenses

The Timesheet and Expenses module allows employees to book time worked against a range of authorized projects (minutes, hours or days). Employees can also claim all expenses incurred against projects or internal job codes. Time and expenses also allows online approvals, providing line managers and project managers the ability to approve anytime and anywhere.

The Time and Expense user interface is optimized for quick data entry and to encourage employees to track their time and expenses diligently. Timesheets and Expenses ensure that all information is readily available in reports, or integrated to accounting or administrative systems in your company. Users only have access to the projects and tasks to which they are assigned, reducing the number of "rogue entries".

3.19 Integration modules

The integration modules provide an interface to enable interchange of data between other systems and Medidata CTMS. The integration modules enable significant automation across your systems; further reducing time spent manually repeating data entry, improving reporting and reducing data entry errors and discrepancies.

3.19.1 Rave Integration

Integration with Rave enables Medidata CTMS to receive data contained within the EDC system as it occurs, providing a synchronized view of your studies. For example, it includes CRF & Visit Activity templates, Site & Site Contacts, Subject data, Subject visits & procedures information etc. The EDC Integration module requires an EDC Connector license.

3.19.2 IVRS Integration

Using the IVRS integration module, Medidata CTMS will receive enrollment data enabling the automatic creation of subjects for a study within the CTMS. This module aids other activities such as scheduling of monitoring visits and other activities. This module reduces the risk of manual data entry error.

3.19.3 SAE Integration

By integrating your Safety system with Medidata CTMS, SAE's are automatically recorded against subjects and their status. This enables the project manager to track the subject status of these from a single view within this solution.

3.19.4 XML Integration

The XML integration tool enables receipt or transmission of data to a variety of systems reducing manual entry and providing improved automation of your systems. The XML tool is custom

configured to suit your applications data format needs.

The CTMS Data Dictionary provides further details of all data points and datasets that are available in the XML import / export integration.

3.19.5 Finance Integration

Alongside the Clinical Payments and Budgets modules, the Finance Integration module provides enhanced finance and budgeting of your clinical projects. The interface provides automatic transmission to and from your finance system enabling real-time finance data in Medidata CTMS and clinical information in your finance system. Integrations to date include Sage and Deltek.

3.19.6 Microsoft Project Integration

The Microsoft Project connector provides the ability to import MS Project data with Medidata CTMS. This module is suitable for organizations that actively manage clinical projects with Microsoft Project.

3.19.7 Veeva Vault eTMF Integration

The Veeva Vault eTMF integration enables the creation of Study, Country, Site and Location objects in Vault, and the transmission of approved Monitoring Visit Reports to your eTMF. This reduces the effort associated with administering the eTMF and provides automation of document transmission to ensure timely document management. The Veeva Vault eTMF integration can be mapped to suit your Vault implementation.

3.20 Sponsor Portal

The Sponsor Portal provides access to the CTMS for sponsor users. Secure access is granted to registered sponsor users enabling sponsors to receive real time status on studies; including site status and subject status as well as other areas that you grant access to. The Sponsor Portal is configurable, enabling the presentation of other pertinent data to authorized external users for enrollment information, monitoring visit information and approval.

The Sponsor Portal enables the sponsor to receive updates as required, reducing the load on the CRO in producing reports. In providing a combination of summary reports and detailed reports, CROs can provide Sponsors with the ability to investigate issues themselves, reducing potential questions and enhancing their visibility to information. A self-service approach not only optimizes your process but also enhances the sponsor experience by removing timescale restrictions that they would have had previously. Access to the system is 24/365.

3.21 Investigator Portal

The Investigator Portal provides access to the clinical trials management solution for study site staff users. Within the Investigator Portal, the site is able to review subjects registered to the site and status of the subject. It is also possible for study site staff to enroll new subjects or update the status of existing subjects.

The portal is configurable, enabling the presentation of other pertinent data to authorized Site Staff users.

3.22 Third Party Software Components

Medidata CTMS uses a third-party Business Intelligence Application, JasperSoft, to enable users to create a selection of web-based ad-hoc interactive reports.

Jasper Reports are defined in an XML file format, called JRXML, which can be hand-coded, generated, or designed using a tool. The file format is defined by a Document Type Definition (DTD), which provides limited interoperability. The XML file should be compiled at runtime using the Jasper Compile Manager. CTMS and a Jasper standalone option for users not using iMedidata will be provided. CTMS-only users will access the application through the CTMS login page. Access to Jasper for CTMS-only users will be provided via a separate URL.

3.23 Localization

Medidata CTMS user interface is released only in English. However the database supports UTF-8 characters.

3.24 Help Files

Each screen in CTMS will have an associated help text that could be reached by clicking the help link of that page.