PDUFA IV Information Technology Assessment

Fiscal Year 2010

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Executive Summary

The Prescription Drug User Fee Act (PDUFA) IV program has enabled the Food and Drug Administration (FDA) to make significant progress toward achieving the long-term FDA Information Technology (IT) goal of a fully electronic submission and review environment for all regulatory documents and data. The FDA continues to work diligently and develop a strong environment for successful coordination with the regulated industry and other stakeholders as we move to more efficient communication and effective processing through IT systems.

FDA is obligated to conduct an annual IT assessment of progress against the PDUFA IV IT Plan and publish a summary of the assessment within two months after the close of each fiscal year. This document provides a current-state IT Assessment against the PDUFA IV IT Plan, published in May 2008, and amended in the abbreviated update in May 2010. The comprehensive PDUFA IV IT Plan Update will be available for public comment in early 2011.

FDA continues to make significant accomplishments toward the PDUFA IV IT goals. In Fiscal Year (FY) 2010, FDA conducted an independent assessment of the current IT governance model, the Bioinformatics Board (BiB), and began implementing recommendations to enhance the model. Throughout the year, the Office of Information Management (OIM) lead the migration of hundreds of applications to two new data centers, utilizing shared environments to improve efficiency and establish a common technical architecture across centers. In addition, activities expanded within the Center for Drug Evaluation and Research (CDER) and the Center for Biologics Evaluation and Research (CBER) to establish comprehensive data standards programs. CDER published a Data Standards Plan to ensure the development and use of data standards for all key data needed to make regulatory decisions. Further, a governing board was appointed to oversee CDER Data Standards Plan implementation, including collaboration with CBER and all stakeholders. CBER is developing a Data Standards Plan modeled after the plan published by CBER, the plan will be released in 2011.

PDUFA projects continue to successfully deliver results in Pre-Market and Post-Market activities. Some of the FY2010 achievements include:

- ICT21 (Information and Computing Technologies for the 21st Century) migrated all CDER and CBER OIM-managed applications to the new data centers.

- DARRTS (Document Archiving, Reporting & Regulatory Tracking System) implemented Release 3.1 that includes safety issue tracking modifications and additional reporting capabilities.

- RPS (Regulated Product Submissions) Release 2 passed ballot as a Draft Standard for Trial Use (DSTU) and testing with industry and product vendors was started in FY10.

- FDA ESG (Electronic Submissions Gateway) enabled processing of over 620,000 submissions in FY2010.

- FAERS (FDA Adverse Event Reporting System) prototype was delivered with focus on CDER and CBER.

FDA and regulated industry continue to make progress towards a fully electronic submission and review environment, at the end of FY 2008 CDER/CBER received 16.18% of all IND, NDA, and BLA submissions in the eCTD format, by the end of FY 2010 the number was up to 42.70%. For FY 2010, 62.28% of all NDA submissions are in the eCTD format, up from 33.20% in FY2008.

During this assessment period, FDA continued to demonstrate that relevant programs are on target and aligned with the PDUFA IV IT goals.

1.0 Purpose

The purpose of this document is to provide a current-state IT assessment against the PDUFA IV IT Plan. FDA is obligated to conduct an annual assessment of progress against the IT plan and publish a summary of the assessment within two months after the close of each fiscal year. This document is located on the FDA PDUFA Website at the following link:

http://www.fda.gov/ForIndustry/UserFees/PrescriptionDrugUserFee/ucm183308.htm

The PDUFA IV IT Plan documented CDER and CBER strategic IT goals to realize an automated, standards-based environment. The IT assessment provides a specific assessment against those goals, provides current metrics that substantiate those goals, and offers associated insights into the progress and challenges identified in FY2010.

Appendix A offers additional detail of the projects referenced in this document. Each project was highlighted in the original PDUFA IT plan.

2.0 PDUFA IV IT Vision

FDA's vision is to drive the current IT environment to a target environment that will provide improved program performance, interoperability, improved use of resources, accelerated system implementation, simplified investment decisions, and reduced IT diversity and complexity. Through these initiatives, FDA is working toward specific progress for major supporting components including:

- Business modernization and transformation
- A target architecture
- Guidance, policy and regulation
- Data standards.

2.1 Business Modernization and Transformation

FDA is in the final stages of migrating to its new state-of-the-art infrastructure architecture, providing a consistent, secure and robust environment in which to run its existing and developing systems. The establishment of this environment provides the technical foundation for consistent operating processes and systems. In conjunction with this, FDA has been assessing and improving its governance program, including a comprehensive

assessment of the strengths and weaknesses of its governance structure, and is using the results of this assessment to strengthen governance across the agency by connecting the supporting activities to streamline decision making, ensure consistent project management of development efforts and implementation of systems, and to leverage different parts of the organization on new development efforts. The consistency of development, implementation, and maintenance of new information systems supports program efficiency and effectiveness and will enable emphasis on the consistency of interactions with regulated parties and other external stakeholders.

2.1.1 Specific Progress

The Bioinformatics Board (BiB) provided oversight to business automation planning, acquisition, and implementation decisions throughout FDA under a strategic framework for IT modernization established by the Commissioner and implemented by the FDA Management Council. The eleven (11) enterprise projects the BiB had approved worked to leverage standards where appropriate and ensure efforts were implemented and maintained in a standard environment.

The Agency continues to evaluate opportunities for improving the governance model. To ensure that the implemented IT governance model was meeting the needs of the Agency, an independent assessment of the BiB was completed in April 2010. The assessment identified the need for greater emphasis on governance, separation of management and governance, increased transparency, and formalized and enforced governance processes. The recommendations from the assessment are being implemented but the direction remains consistent -- to focus on the entire Agency IT portfolio, and establishing common governance processes – both to prioritize new projects and operate efficiently around the current portfolio.

In May 2010, FDA’s Principal Deputy Commissioner and Acting Bioinformatics Board (BiB) Chair, after reviewing the proposed governance structure and plan with FDA’s Senior Leadership and with the Science Board IT Subcommittee, approved the replacement of the Bioinformatics Board with the new recommended Informatics Governance Board (IGB) governance and organization structure. An interim governance board (also known as iIGB) has been established, consisting of executive representatives from each of the Centers and Office of the Commissioner, to execute governance while the new structure is implemented. The iIGB recommends IT portfolio decisions to FDA's senior leadership for ratification.

The Office of Information Management (OIM) officially began operating as a single entity, centralizing information technology resources for the Agency, on October 1, 2008. Activities are ongoing to improve operating processes and

to identify and establish appropriate workforce skills and staffing levels required to operate efficiently in this enterprise environment.

2.2 Target Architecture

FDA adopted the Office of Management and Budget (OMB) segment architecture approach which promotes a measurement and line of sight for investments to business strategy. In FY2010, work progressed on a report that will provide an initial draft of the segments and metrics aligned with the current IT investment portfolio. This effort will inform the creation of a target architecture (December 2010) which, subsequently, will be used to develop an IT sequencing plan, IT roadmap and IT Transition Plan as guidance for all investments.

2.2.1 Enterprise Architecture

The Enterprise Architecture (EA) establishes a course for achieving the FDA's target architecture to support Agency prioritized projects. EA implements a business-driven plan that aligns the associated IT drivers including FDA's business architecture, data architecture, applications architecture, technical architecture, security architecture, and standards profile. The FDA Enterprise Architecture program collaborates with the agency's Data Standards Council and each Center as it regularly performs analyses of the architecture as the agency transitions from current state into the target state.

2.2.1.1 Specific Progress

The EA staff has established FDA compliance with Department of Health and Human Services (HHS) mandates and demonstrated effective oversight through rationalization, documentation, and reduction of FDA's portfolio and technical footprint. To date, the baseline data for the target (current state analysis and data collection) has been captured and modeled in the HHS EA Repository (HEAR). In addition, the IT Strategic Plan (ITSP) has been reviewed and, together with an investment portfolio gap analysis, the baseline data will serve as a foundation for target architecture planning.

2.2.2 e-Platform

In the current evaluation FDA is not pursuing ePlatform as part of its Target Architecture. FDA will provide an update on projects related to ePlatform in the next IT Plan Update.

2.3 Guidance, Policy and Regulation

As part of the PDUFA IV strategy to move to a fully electronic submission and review environment, FDA is developing regulations and guidance to improve the consistency of submission processing, access to documents and data, and evaluation of submission information. FDA also continues to update technical specifications and IT-related guidance documents in support of an electronic environment.

2.3.1 Specific Progress

During this assessment period, the following IT guidance was published:

- Draft Guidance for industry - SPL Standard for Content of Labeling Technical Questions and Answers (October 2009).

2.4 Data Standards: Development and Implementation

FDA coordinates the development of standards by working with Centers, Standards Developing Organizations (SDOs) and industry, subsequently implementing these standards internally through the centers.

2.4.1 Development of Standards (High Level Language)

FDA currently receives massive amounts of study data submitted using disparate structures, content formats, and terminologies. Thus, development and implementation of data standards are integral to more efficient and effective drug products review. FDA continues to work with stakeholders to coordinate the development and implementation of standards through collaboration SDOs, pilot testing, external training and tutorial sessions. In addition to data exchange standards, FDA continues work on content formats, terminology and code set standards.

2.4.2 Implementation of Standards at Centers

In FY2010, activities expanded within CDER and CBER to establish comprehensive data standards programs. CDER implemented a Data Standards Program to ensure the development and use of data standards for all key data needed to make regulatory decisions. CDER published the Draft Data Standards Plan in March 2010 to establish a basic set of processes that support data standards development and implementation. The plan also encompasses guidance for reviewers and industry, reviewer training, and internal/external communications. The CDER Draft Data Standards Plan is available at http://www.fda.gov/downloads/Drugs/DevelopmentApprovalProcess/FormsSubmissionRequirements/ElectronicSubmissions/UCM214120.pdf.

As part of the Data Standards Program, a governing board was appointed to oversee CDER Data Standards Plan execution and the planning, analysis and reporting of resources invested in data standards projects. Both CDER and CBER have expanded collaboration with all key stakeholders. Ongoing standards efforts continued to advance during FY2010. CBER is pursuing a similar course of action. FDA's intent is to insure that all medical product review centers coordinate their efforts.

Please refer to Appendix A for related project status updates.

3.0 PDUFA Projects

This section is divided into two sub-sections; Pre-Market Activities and Post-Market Activities. This section describes the current IT environment at a high level and shows FDA's progress through projects that directly relate to these lines of business.

3.1 Pre-Market Activities

The PDUFA IV IT objective is to apply technology to the FDA regulatory review process in the most efficient and effective way possible to make sure reviewers have the information and tools they need to make more informed and timely decisions. This strategy supports FDA's vision of a fully electronic submission and review environment for all regulatory documents and data and the ultimate elimination of paper-based submissions.

An automated review environment comprises many components. Although many projects contribute to the success of an automated review environment, PDUFA focuses on projects that offer high impact for automated tracking, validation, document management, and data sharing. Projects include:

- Information and Computing Technologies for the 21st Century (ICT21)
- The Document Archiving, Reporting and Regulatory Tracking System (DARRTS)
- Regulated Product Submission (RPS)
- The FDA Electronic Submissions Gateway (ESG)
- The common Electronic Document Room (cEDR)
- The electronic Common Technical Document (eCTD) Review System
- Modular Data Exchange for Labeling Submissions
- Janus.

3.1.1 ICT21 - Information and Computing Technologies for the 21st Century

Information and Computing Technologies for the 21st Century (ICT21) project provides an Agency-wide computing environment for the 21st century that is efficient, effective, scalable, flexible, reliable, and meets FDA's business requirements. The successful delivery of these objectives will enable FDA to create a secure infrastructure, with improved service, response times, and overall performance.

FDA has successfully designed and prepared for two new data centers, one for development and test and another for production data. The first production application was launched at the Ashburn Data Center in May 2010. CBER completed migration of OIM-managed applications in June, 2010 and CDER completed migration of OIM-managed applications in August, 2010. As of September 2010, 83% of OIM-managed applications are in production in the CHDC. Authorization to operate for the White Oak Data Center was received in April 2010.

All OIM-managed applications are on schedule to move out of the old data center in Park Lawn by March 2011.

3.1.2 DARRTS – Document Archiving, Reporting & Regulatory Tracking System

DARRTS is a flexible, integrated, fully electronic workflow tracking and information management system to receive, log, track, assign, process, and manage official submissions with internal and external stakeholders. Overall, this program has successfully implemented automated tracking and management capabilities to:

- Reduce the number of systems used to manage, track, receive and report
- Increase automation
- Implement workflow management
- Improve accuracy and timeliness of data
- Build and easily change the business rules to support increased regulatory changes and complexity.

In addition to migrating DARRTS to the new data center, a number of enhancements were implemented. In September 2010 the DARRTS Working Group (DWG) and the Office of Information Management (OIM) implemented DARRTS Release 3.1. The improvements include, but are not limited to, the following items:

- Streamlining of Safety Issue tracking modifications that include the ability to update the status of multiple safety issues in alignment with the current business process in the creation of the safety issues.

- The ability to more easily update reviewer assignments to the safety issue.

DARRTS also had a number of minor releases to address business process improvements and each release included additional reporting capabilities.

Release 3.2 is planned in May 2011. It will incorporate DDMAC submissions into DARRTS and will retire two legacy systems - ADMIS and MACMIS. The DARRTS team has started the requirements phase for DARRTS Release 4.0 which will include Biologics license applications (BLAs).

3.1.3 RPS - Regulated Product Submission

The RPS is a Health Level Seven (HL7) standard to facilitate the processing and review of regulated product information. RPS was selected to be used for the next major version of the eCTD. The FDA plans on using the RPS standard to meet the PDUFA goals of cross-referencing previously submitted electronic materials through standardized automated links and to enable two-way communication between sponsors and FDA by incorporating these requirements into the RPS message.

RPS Release 2 passed ballot as a Draft Standard for Trial Use (DSTU) in January 2010. The HL7 RPS R2 DSTU subgroup was formed to develop test cases, controlled vocabulary, and RPS messages to perform the RPS testing. The current scope of RPS testing is US-based eCTD submissions. In FY2010 the phase 1 test scenarios and RPS messages were completed and phase 2 test scenarios and controlled vocabulary were finalized. Based on the phase 1 test scenarios and RPS message development activities, the group made recommendations on RPS Release 3 requirements, model changes, and message development.

The HL7 RPS Release 3 (R3) project was approved by HL7. RPS R3 will include the International Conference on Harmonization (ICH) requirements not covered in the DSTU Release 2 ballot and will also include additional regional requirements. Both ICH and FDA plan on using the RPS R3 message to implement the next major version of the eCTD. The HL7 RPS R3 project team has been meeting throughout FY2010 and the target RPS R3 DSTU ballot is scheduled for May 2011.

3.1.4 ESG - FDA Electronic Submissions Gateway

The FDA Electronic Submissions Gateway (ESG) enables the secure submission of regulatory information for FDA review. It is a single point of entry for the receipt and processing of all submissions in the FDA. The FDA

ESG receives the submission from a sender who is registered to use the FDA ESG, acknowledges the receipt of the submission (to the sender), and routes and notifies the receiving FDA center of the delivery of the electronic submission.

The ESG received and processed over 549,058 submissions in FY2010. The AERS program received an average of 34,945 post-marketing safety reports monthly in FY2010. Since 2007, the number of new Industry ESG production WebTrader accounts has grown from 102 to 3,248.

FDA/CDC ESG VAERS build is coming to completion. The FDA's portion of this project was completed in December 2009.

3.1.5 cEDR - Common Electronic Document Room

FDA's cEDR would establish an Agency-wide, standards-based EDR, as a single repository for all FDA-regulated product documents. A common EDR would give FDA the capability to streamline the submission process, provide reviewers additional collaboration capabilities, and provide reviewers secure access to and the ability to search for information across traditional organizational boundaries.

The Final Requirements Document and Requirements Matrix were completed in October 2009. The Use Cases document that presents usage scenarios for the future system based on the defined requirements was created. The final common taxonomy (i.e., classification approach) and common metadata elements (i.e., common vocabulary) were completed in March 2010.

This project is currently on hold pending further direction from the IGB.

3.1.6 eCTD – Electronic Common Technical Document Review System

FDA's eCTD Review System allows reviewers to review submissions submitted in the International Conference on Harmonization (ICH) eCTD format. In addition, the system provides submission validation and review capabilities to users throughout the Agency.

In FY2010 FDA continued to work with its vendor to resolve validator issues encountered during the implementation of the upgraded validator. FDA is targeting implementation for June 2011 following testing by the FDA. A revised list of validation criteria was developed and published in draft in December 2010. A final version will be published prior to implementation.

FDA has identified changes to Module 1 to streamline the submission of information and provide greater support for the submission of advertising and promotional materials. The plan is to rollout the updated US Module 1 in 2011 and to provide a public comment period on the updates. The objective

is to accept eCTD submissions with the M1 update by the end of 2011. There will be a transition period when both the current M1 version and updated M1 version will be accepted.

3.1.7 Modular Data Exchange for Labeling Submissions

FDA continues to evaluate the project and will resume dialog with industry on how to set up an environment that is both productive and valuable to FDA and industry.

3.1.8 Janus

The Janus initiative aims to create scientific data repositories that support the acquisition, validation, integration, and extraction of data from the increasingly large and complex datasets received by the Agency. It integrates enhanced analytical, visualization, and other computational tools and techniques to enable more efficient and effective scientific reviews.

In FY2010, the Agency received an American Recovery and Reinvestment Act (ARRA) award for the conduct of comparative effectiveness research (CER) that will leverage the Janus infrastructure and capabilities. These activities will further Janus progress through the development and implementation of a new clinical trials database. Further, the successful use of Janus in CER activities will effectively demonstrate the value and feasibility of the Janus concept. In these efforts, the FDA continues to partner with the NCI to support the development of the Janus operational pilot (Phase 3). This includes supporting the software development life-cycle phases of requirements and design analysis, development/enhancement, testing, training, and implementation of the Janus infrastructure. This work will continue through FY2013.

The development of standards-based scientific data exchange networks is fundamental to the integration of data from a wide variety of internal and external sources and to create large-scale data-sharing infrastructures, such as Janus. To support this objective, the Janus Program continues to collaborate in the development and testing of CDISC HL7 Message project (i.e., study data) standards and the refinement of data presentation standards (i.e., CDISC SDTM and SEND). During the last year, the Janus program sponsored a proof of concept project to develop XForms and stylesheets as testing tools for the CDISC HL7 Study Data standards designed to exchange study data into Janus. These prototype tools are publicly available to data standard development stakeholders.

3.2 Post-Market Activities

The modernized post-market safety related IT systems will ensure the best collection, evaluation, and management of the vast quantity of safety data

that is received by FDA. Improvement in the infrastructure will support access to and the analyses of externally linked databases, as well as a system to replace FDA's current Adverse Event Reporting Systems (AERS) and safety signal detection and management tools.

3.2.1 FAERS – FDA Adverse Event Reporting System

The FAERS initiative will enable FDA to improve the timeliness, accuracy, and usability of its product safety surveillance data by significantly reducing delays and errors associated with manual data entry and coding of paper reports. The FAERS System will:

- Comply with E2B interchange standards, provide better case management, reporting and tracking
- Provide a user-friendly internet portal for anyone to report an adverse event resulting from a FDA-regulated product
- Provide an Agency-wide repository of adverse event reports (FAERS) with integrated safety signal management and analytical tools.

3.2.1.1 Specific Progress

In this assessment period the first FAERS prototype was delivered to FDA with focus on CDER and CBER. Prototype training was provided to CDER, CBER, and Data Entry personnel. The Product Dictionary Requirements Document and FAERS Boundary Document were completed and approved.

The FDA has re-planned the FAERS initiative based on an OMB TechStat Review. The planned changes include breaking the program into smaller increments, identifying a single program manager with authority over the whole program, performing an alternatives analysis, and developing performance goals.

Currently, the FAERS team is creating all FAERS Planning documents based on the Enterprise Performance Life Cycle (EPLC). Approval and prioritization of FAERS gap requirements for CBER and CDER is underway for the replacement of legacy AERS.

3.2.2 Sentinel

The Agency believes that this Post-Market Safety program is not an IT initiative. The Sentinel program will be removed from the PDUFA IT plan, Annual IT Assessment, and Quarterly Industry Report.

4.0 Performance Metrics

The PDUFA metrics measure progress and achievement of objectives throughout PDUFA IV in alignment with the PDUFA IV performance goals and the PDUFA IT Plan.

4.1 PDUFA Spending

To better understand the progress towards a common PDUFA IT environment, FDA is reporting on the percentage of annual spending on maintenance of legacy systems and enterprise IT (Common) systems. Enterprise IT systems are categorized as common across organizational divisions participating in the process for the review of human drug and biologic applications. Legacy IT systems are those that are in use in a single center. Enterprise IT systems are categorized as those systems that are common across organizational offices and divisions participating in the process for the review of human drug and biologic applications. Examples of Enterprise IT systems are software applications, tools, and other products that both CDER and CBER use or plan to use to receive, track, and review PDUFA submissions. Enterprise architecture activities and IT infrastructure consolidation activities are incorporated into this category of spending.

Figure 1: 2008 and 2009 Common vs. Legacy Spending shows that spending on legacy programs has increased since 2008. The increase is a direct result of maintenance activities to ensure successful migration of legacy systems into the new data center and implementing the necessary reporting mandates to support FDAAA legislation.

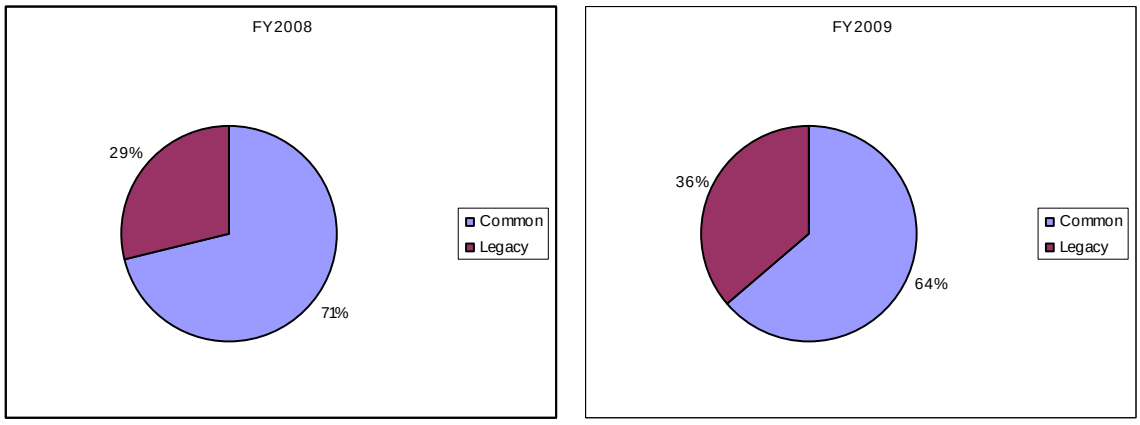

Figure 1: 2008 and 2009 Common vs. Legacy Spending

Figure 2: 2009 and 2010 Common vs. Legacy Spending shows spending on Common and legacy programs. Due to ICT21 migration in FY2010, some of the legacy applications of CBER and CDER contracting actions were delayed to accommodate ICT21 migration. Overall spending on legacy applications has decreased in FY2010.

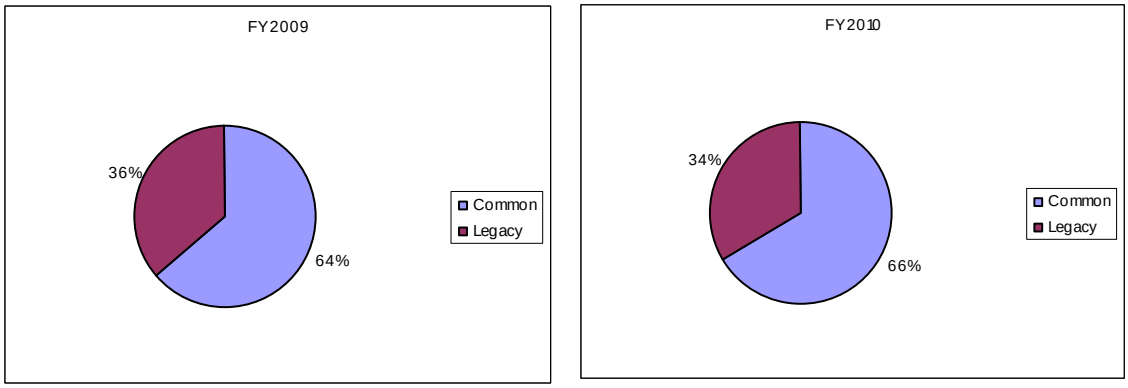

Figure 2: 2009 and 2010 Common vs. Legacy Spending

4.2 Electronic Submission Adoption

Increasing the number and percentage of IND, NDA, and BLA submissions received in valid electronic format is a goal that is supported by the FDA and industry stakeholders. To support the assessment of this goal, the following information will be tracked and reported at least annually:

Figure 3: Electronic Submissions Categorized by Application provides the total number of eCTD electronic submissions categorized by type of submission.

Application	No. of Applications	No. of Sequences
IND	3,040	86,972
NDA	1,728	35,511
ANDA	4,265	23,125
BLA	176	10,939
MF	654	2,075
FDA Internal	541	951
Total	**10,429**	**159,569**

Figure 3: Electronic Submissions Categorized by Application

Figure 4: FDA eCTD Submissions in Electronic Format shows the total number of submissions in valid electronic format in compliance with FDA standards.

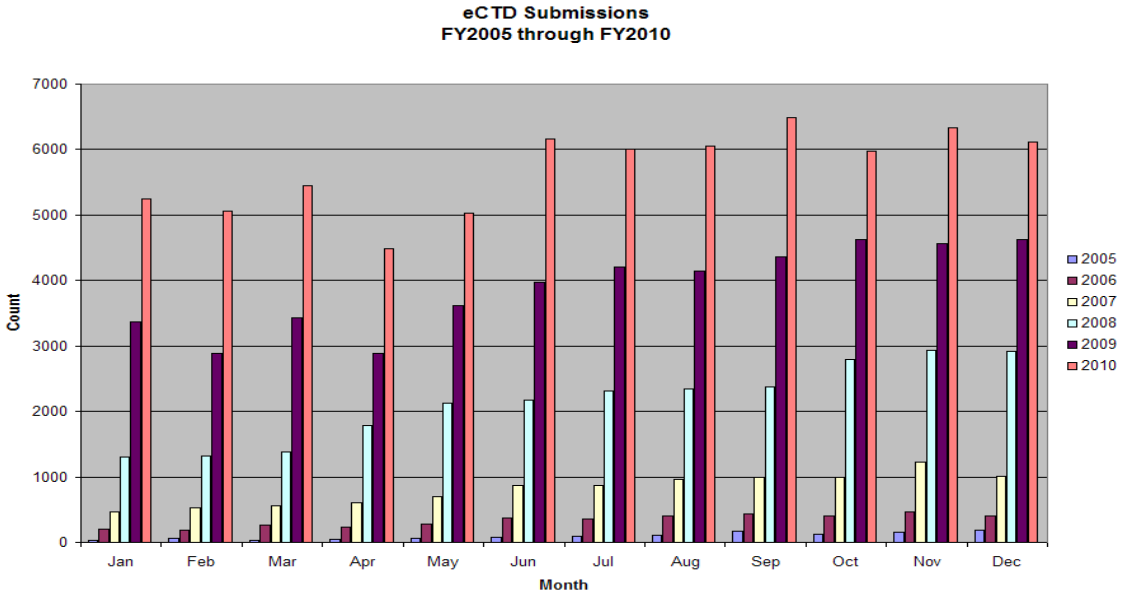

Figure 4: FDA eCTD Submissions in Electronic Format

Figure 5: Submissions through Secure Electronic Single Point of Entry presents the total number of submissions received through the secure electronic single point of entry (i.e. Gateway).

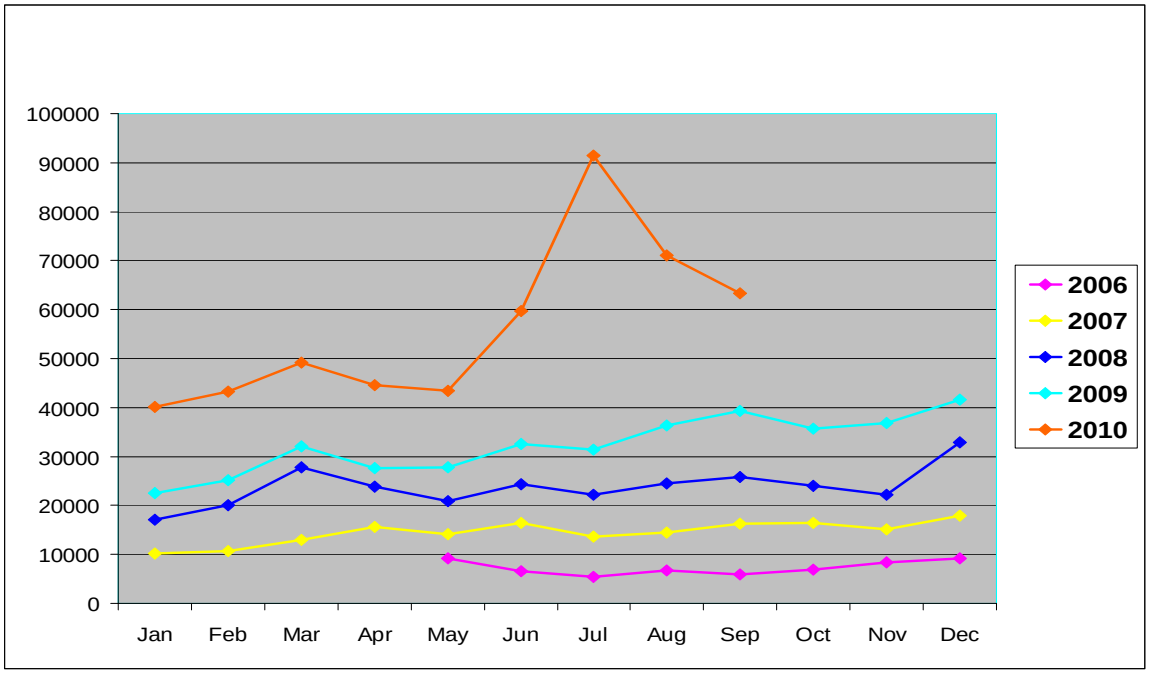

Figure 5: Submissions through Secure Electronic Single Point of Entry

Figure 6: Gateway Accounts provides counts for the current number of Gateway trading partners at FDA.

Accounts and Companies Stats			
	Production		Pre-Production
	on July 09	Today	Today
# of Accounts			
AS2	55	89	163
WT	799	3159	5308
Total	854	3248	5471
# of Companies			
AS2	42	71	109
WT	282	1947	3517
Total	242	1976	3555

Figure 6: Gateway Accounts

Figure 7: Percentage of Submissions Received provides data to determine the total number of submissions received substantially on paper. Analysis suggests the following:

- The percentage of IND Originals in electronic and standardized format remained relatively stable; the number of amendments in electronic and standardized formats has nearly doubled.
- The percentage of new NDAs/supplements submitted electronically has remained relatively stable, the number submitted in eCTD format rose from 28% to 62%.

	FY2008				
	Total	Electronic	%	eCTD	%
CDER IND	85,617	13,319	15.56%	12,555	14.66%
CBER IND	7,026	1,357	19.31%	771	10.97%
TOTAL	92,643	14,676	15.84%	13,326	14.38%
CDER NDA	22,290	11,266	50.54%	7412	33.25%
CBER NDA	34	0	0.00%	0	0.00%
TOTAL	22,324	11,266	50.47%	7,412	33.20%
CDER BLA	2,171	902	41.55%	544	25.06%
CBER BLA	11,522	1,473	12.78%	842	7.31%
TOTAL	13,693	2,375	17.34%	1,386	10.12%
TOTAL	128,660	28,317	22.01%	22,124	17.20%

	FY2009				
	Total	Electronic	%	eCTD	%
CDER IND	86,989	25,387	29.18%	24,770	28.47%
CBER IND	6,502	2,135	32.84%	1,552	23.87%
TOTAL	**93,491**	**27,522**	**29.44%**	**26,322**	**28.15%**
CDER NDA	22,086	11,535	52.23%	11,129	50.39%
CBER NDA	150	4	2.67%	4	2.67%
TOTAL	**22,236**	**11,539**	**51.89%**	**11,133**	**50.07%**
CDER BLA	2,571	1,887	73.40%	1,721	66.94%
CBER BLA	11,228	1,818	16.19%	1,104	9.83%
TOTAL	**13,799**	**3,705**	**26.85%**	**2,825**	**20.47%**
TOTAL	**129,526**	**42,766**	**33.02%**	**40,280**	**31.10%**

	FY2010				
	Total	Electronic	%	eCTD	%
CDER IND	92,218	37,515	40.68%	36,814	39.92%
CBER IND	6,406	2,951	46.07%	2,351	36.70%
TOTAL	**98,624**	**40,466**	**41.03%**	**39,165**	**39.71%**
CDER NDA	22,443	15,497	69.05%	14,007	62.41%
CBER NDA	70	13	18.57%	13	18.57%
TOTAL	**22,513**	**15,510**	**68.89%**	**14,020**	**62.28%**
CDER BLA	2,703	2,331	86.24%	2,250	83.24%
CBER BLA	11,391	3,076	27.00%	2,312	20.30%
TOTAL	**14,094**	**5,407**	**38.36%**	**4,562**	**32.37%**
TOTAL	**135,231**	**61,383**	**45.39%**	**57,747**	**42.70%**

Figure 7: Percentage of Submissions Received

Figure 8: Invalid CDER and CBER Submissions in 2010 represents the number of invalid CDER and CBER submissions received in the calendar year 2010. Analysis suggests the following:

- Rejections represent an extremely small percentage of submissions
- Predominant reasons for rejection are duplicate submissions
- Standardization of submission format does not appear to be contributing to an increase in rejected submissions.

Period: January 2009- December 2009	Rejected: 757						Percent Rejected:	1.1%
Rejection Category	**NDA**	**ANDA**	**IND**	**BLA**	**DMF**	**DLRS**	**MISC**	**Total**
Broken or corrupted media received	**6**	26	8	0	0	6	0	46
Duplicate content received	5	3	2	0	0	0	0	10
Duplicate Core ID received	0	0	0	0	0	0	0	0
Duplicate sequence received	70	63	95	6	3	0	0	237
GS Validate high error	5	1	12	0	0	0	0	18
Invalid applica ion or sequence	4	4	10	1	2	0	0	21
Mismatched applica ion, sequence or type	14	39	18	7	5	0	0	83
No data received	12	33	23	12	0	9	1	90
Not in standard eCTD format	26	48	35	4	15	2	4	134
Per CSO/Sponsor request	2	4	1	1	0	0	0	8
Sent to wrong center	6	2	30	11	1	60	0	110
Total	**150**	**223**	**234**	**42**	**26**	**77**	**5**	**757**

Period: January 2010 December 2010	Rejected: 1109						Percent Rejected:	1.3%
Rejection Category	**NDA**	**ANDA**	**IND**	**BLA**	**DMF**	**DLRS**	**MISC**	**Total**
Broken or corrupted media received	25	18	21	0	2	1	9	76
Duplicate content received	0	13	0	0	0	0	0	13
Duplicate Core ID received	0	0	0	0	0	0	0	0
Duplicate sequence received	57	83	126	2	8	11	0	287
GS Validate high error	0	6	1	0	0	2	0	9
Invalid application or sequence	0	0	1	0	2	1	0	4
Mismatched application, sequence or type	36	47	33	0	2	5	0	123
Multiple/application/sequence/Us-regional.xml	4	15	8	0	0	2	1	30
No data received	14	12	27	1	0	3	48	105
Not in standard eCTD format	27	24	29	0	1	11	6	98
Per CSO/Sponsor request	2	39	6	0	0	2	0	49
Sent to wrong center	7	149	34	47	8	1	69	315
Total	**172**	**406**	**286**	**50**	**23**	**39**	**133**	**1109**

Figure 8: Invalid CDER and CBER Submissions in 2010

5.0 Appendix A: Project Level Status

The following table reflects the current status of the projects associated with the PDUFA IV IT Plan, published in May 2008.

This table was developed to assist in providing accurate tracking of the projects referenced in the PDUFA IV IT Plan. The projects listed in this table were described in the IT Plan by category (i.e. Pre-Market, Post-Market, and Data Standards).

The table contains three columns. The first column lists the name of each project and a short description. The second column describes the projects' milestones noted in the PDUFA IT Plan. The last column reflects the status of each project, as of September 2010.

PDUFA IV 2010 IT Assessment
5.0 Appendix A: Project Level Status

Project Name and Description	*IT Plan Milestones*	*FY2010 Status*
e-Platform A common electronic platform for the exchange of clinical research data.	The project is on hold. FDA will provide an update on this project in he next IT Plan Update in the first quarter of CY2011.	There was no activity on this project in FY2010.
FIREBIRD A common electronic platform for the exchange of clinical research data.	This project is on hold.	There was no activity on this project in FY2010.
Regulated Product Submission (RPS) RPS is a Health Level Seven (HL7) data exchange standard that will support improvements to the processing and review of regulated product information.	Perform RPS R2 DSTU testing and provide feedback to he RPS R3 project. - June 2010 Complete development of test cases and controlled vocabulary. - September 2010 Complete testing and; provide feedback and recommendations on updates to he RPS exchange standard. - May 2011 RPS Release 3 DSTU ballot. After passage of the RPS R3 DSTU ballot FDA will participate in he RPS testing and prepare for implementation of the eCTD based on the RPS exchange message. Implementation activities include; updating ICH specifications; updating FDA guidance; documenting and finalizing RPS controlled vocabulary; and performing system development and enhancements. FDA's current target for accepting eCTD RPS based messages is mid-2013.	RPS Release 2 • Draft Standard for Trail Use (DSTU) ballot passed • HL7 RPS R2 DSTU subgroup formed to develop test cases, controlled vocabulary, and RPS messages to perform the RPS testing. The current scope is US based eCTD submissions. By the end of FY2010: - The phase 1 test scenarios and RPS messages were completed. - The group was developing recommendations on requirements, model changes, and message development for the RPS R3 workgroup to consider based on the phase 1 test scenarios and RPS message development activities. - The group was finalizing the phase 2 test scenarios and controlled vocabulary. The HL7 RPS Release 3 (R3) project was approved by HL7. RPS R3 will include the ICH requirements not covered in the DSTU Release 2 ballot and will also include additional regional requirements. Both ICH and FDA plan on using the RPS R3 message to implement the next major version of the eCTD. The HL7 RPS R3 project team has been mee ing throughout 2010 and the target RPS R3 DSTU ballot is May 2011.
Electronic Submissions Gateway (ESG) An FDA-wide solution hat enables the secure submission of electronic regulatory submissions and has been in production since May 2006. ESG provides the single point of entry for the receipt and processing of all PDUFA submissions.	As stated in he PDUFA IT Goals, the FDA will extend the capability of the secure single point of entry to include two-way transmission of regulatory correspondence. The FDA has had preliminary planning discussions on expanding he ESG functionality to meet this goal. The FDA does not plan on expanding the ESG func ionality in this area in 2011. Depending on the progress garnered as well as the uptake by interested par ies, he FDA could expand the ESG to additional areas of interest during FY 2011.	• The ESG has currently received and processed over 549,058 submissions in FY 2010. • The AERS program has received an average of 34,945 post-marketing safety reports monthly in FY 2010. • The number of new Industry ESG production WebTrader accounts has seen a full logarithmic expansion between the years of 2007 and 2010. • FDA/CDC ESG VAERS build is coming to completion. The FDA's portion of this project was completed in December 2009.
Electronic Common Technical Document (eCTD) Review System The FDA eCTD Review System was implemented in 2005, and allows reviewers to review submissions submitted in the ICH eCTD format.	Following the availability of he next version of FDA's review tool, FDA will finalize the implementation and tes ing plans and move aggressively to implement his new version. Addi ionally, FDA will be revising its eCTD Validation Criteria to align with he validation criteria implemented in this new version. FDA will also look to clarify existing documentation to remove any ambiguities which may exist in the current documentation. Since a release date has not been established by the vendor, FDA cannot provide an estimated implementa ion date at this time.	• FDA worked with its vendor to resolve validator issues encountered during he implementation of he upgraded validator in 2010. • A revised list of validation criteria was developed and will be published prior to implementation. • FDA is targeting implementation for June 2011 following testing by he FDA. • FDA has identified changes to Module 1 to streamline the submission of information and provide greater support for he submission of advertising and promo ional materials. FDA plans to rollout the updated US Module 1 in 2011.
Workflow Tracking and Information Management System (DARRTS) A flexible, integrated, fully electronic workflow tracking and information management system to receive, log, track, assign, process, and manage official submissions wi h internal and external stakeholders.	DARRTS continues to develop using an iterative process. Release 3 development will continue as CDER continues planning for Release 4.0 to include the development and migration requirements for implementing CDER's BLAs. Anticipated future DARRTS 3 releases are expected to include functionality designed to enhance FDA operations by fur her automating the submission receipt process through enhancements to Module 1 of the eCTD, to implement tracking to support Biomarker/Qualification business processes, improve support for FDAAA Title VIII requirements as well as other improvements. DARRTS Release 3.1 is curren ly scheduled for September 2010. Due to the ongoing work under the ICT21 release 3.1 has been delayed and there may be issues which impact the 3 2 and later releases.	In September 2010 the DARRTS Working Group (DWG) and the Office of Information Management (OIM) implemented new enhancements to he DARRTS program in DARRTS Release 3.1. The improvements include, but are not limited to, the following items: • Safety Issue tracking modifications that include the ability to update the status of mul iple safety issues in alignment with the current business process in he creation of he safety issues. • The ability to easily update reviewer assignments for the application and submission. DARRTS also had a number of minor releases to address business process improvements and each release included additional reporting capabilities. • Release 3.2 is currently in development and is scheduled for deployment in May, 2011. The DARRTS team has started the requirements phase for DARRTS Release 4.0 which will include CDER and CBER biologics license applica ions (BLAs).

PDUFA IV 2010 IT Assessment
5.0 Appendix A: Project Level Status

Project Name and Description	*IT Plan Milestones*	*FY2010 Status*
Information and Computer Technologies for the 21st Century (ICT21) To provide an Agency-wide computing platform for he 21st Century hat is scalable, flexible, and reliable and effec ively and efficiently meets business requirements.	1st production applica ion live in Contractor Hosted Data Center (CHDC) - 6-1-2010 Authority to Operate (ATO) for he White Oak Data Center - 5/31/2010 All O M managed applications live in CHDC - 10/29/2010 All O M managed applications (except VMS based) moved out of the old datacenter in Park Lawn - 1/31/2011	• 1st production application was live in CHDC in May, 2010. • ATO for the White Oak Data Center (WODC) was received in April, 2010. • 83% of O M-managed applications are currently live in production in the CHDC. • All OIM managed applications (except VMS based) are on schedule to move out of he old data center in Park Lawn by 12/31/2010. • CBER completed migration of OIM applications in June, 2010. • CDER completed migration of OIM applications in August, 2010. • All OIM-managed applications are on schedule to move out of the old data center in Park Lawn by March 2011.
Common Electronic Document Room (cEDR) cEDR would establish an Agency-wide standards based EDR as a single platform repository for all FDA-regulated product documents.	Initial plans following the requirements phase and the alternatives analysis phase of the project were to proceed with procurement activities and to deliver he cEDR initial operating capability (i.e., an operational, produc ion system) followed by the migration of existing EDRs/documents. The FDA recently completed an enterprise IT portfolio assessment to evaluate the overall progress, approach, and risks of each project. The resulting recommendations focus on leveraging he FDA's limited resources. Specifically, Documentum was selected as the EDR tool of choice, based on FDA's current use of the tool. With comple ion of the most recent deliverables, he project will not proceed further in FY 2010 and will be reevaluated in he near future.	• Final Requirements Document and Requirements Matrix were completed in October 2009. • Completed demonstration of Use Cases document. This is a narrative document that presents usage scenarios for the future system based on the defined requirements. • Final common taxonomy (i.e., classification approach) and common metadata elements (i.e., common vocabulary) were completed in March 2010.
Electronic Listing ELIST is the production system for managing Structured Product Labeling (SPL) files received in HL7 Message format. The SPL files are used for product labeling, listing and indexing as well as for establishment registrations.	Continue adding data validation procedures, maintaining indexing files, and star ing pilots for managing SPL files for other FDA regulated products.	• Averaging over a hundred of submissions a day • Includes bo h human and animal drugs and bo h OTC and prescription • The automated system processes the submissions as designed. • Updates are sent for distribution daily. • Training sessions are held multiple times per week. • Electronic submission of registration and listing information required as of June 1, 2009. • Manages SPL files for product labeling for approved drugs regulated by CDER and CBER.
Substance Registration System (SRS) Purpose is to support health information technology initiatives by genera ing Unique Ingredient Identifiers (UNII) for substances in drugs, biologics, foods and devices.	Continue wi h operation and maintenance.	• UNII's are now listed on NLM's Chemid website, advanced search features are now available that include type ahead, spell checker and a chemical finder. • All reviewers now have query access to the SRS.
CDISC - HL7 Message Project The FDA plans to transi ion to HL7 exchange messages for submission of all study data. This initiative is based on he outcomes of the CDISC Content to HL7 Message Exploratory Project.	FDA's DSC will: • Con inue to collaborate with CDISC and FDA stakeholders to develop a comprehensive testing plan for the Study Data Standards. • Work with CDISC and FDA stakeholders to develop a long term strategy for transitioning to HL7 Study Data Standards. • Design and develop tools that can be used to implement he Study Data Standards in CDER and CBER. • Work with CDER and CBER to determine a reasonable implementation strategy and timeline for CDER and CBER.	• Study Participation and Study Design Messages have been posted on the HL7 web site as DSTUs (Draft Standards for Trial Use). • The Subject Data Specifica ions will be updated to reflect the changes (Q4 2010). • Subject Data Message has also passed DSTU in September 2009. • FDA is proceeding with tes ing the messages. Tes ing plans will include testing with Industry. • The first phase of tes ing is completed. Examples for all study data standards including ICSR were created and successfully loaded into he RIM based database using the HL7 Data Exchange Services. These are the same services curren ly implemented in eLIST for SPL files. Addi ional testing ongoing prior to use in 2010. • As stated in the Assessment, FDA intends to be capable of receiving study data in accordance wi h HL7v3 study messages by 2013. The FDA has not set a date for only receiving study data using HL7 messaging. • Contract awarded for HL7 Message Exchange Service that will be used to validate data conforming to he Study Data Standard.

Project Name and Description	*IT Plan Milestones*	*FY2010 Status*
Clinical Data Interchange Standards Consortium (CDISC SDTM - Clinical) Standard for the submission of human study data for Janus.	Message development is underway in HL7. Plan is to go to DSTU (Draft Standard for Trial Use) ballot at the end of 3rd Quarter of CY 2008 and to test he messages as part of the Janus phase 3 pilot. Addi ional milestones include: 3rd Quarter, 2008 2008-2009 HL7 DSTU Ballot 3rd Quarter 2009 Testing 2009-2012 HL7 Normative Ballot 2013 and Beyond FDA accepts both CDISC-HL7 XML and SAS transport files FDA accepts only CDISC-HL7 XML	• CDISC V3.1.2 SDTM Implementation Guide (SDTM-IG) is available. • The Study Data Specifications will be updated to reflect the changes (Q4 CY 2010). • CDER is determining if hey need to clarify any ambiguities in the implementa ion guide. • CDER reviewers have indicated that they need analysis datasets in addi ion to SDTM datasets. • CBER is collec ing information on submissions in order to inform evolution of the standard to meet he needs of regulatory reviewers. As stated in the Assessment, FDA intends to be capable of receiving study data in accordance with HL7v3 study messages by 2013. The FDA has not set a date for only receiving study data using HL7 messaging.
Standard for Exchange of Nonclinical Data (SDTM - SEND) Pilot Implementation of he SDTM for animal studies.	Publication of production SEND Implementation Guide expected Q1-Q2 CY 2011 for carcinogenicity and general toxicology studies. Pilot will be extended for reproductive and safety pharmacology studies. Release of SEND Implementation Guide (SENDIG) v3.0 Draft B and the SEND Controlled Terminology v3.0 Draft B in Q4CY2010.	• SEND pilot (Phase II) ending April 2010 continues the evaluation of SEND by CDER. • The SEND Implementation Guide (SENDIG) v3.0 Draft A and the SEND Controlled Terminology for v3 0 Draft A were released on Q2CY2009 (http://www.cdisc.org/). • SEND team is working on release for public comment of SEND Implementation Guide (SENDIG) v3 0 Draft B and the SEND Controlled Terminology v3.0 Draft B in Dec 2010. This release is expected to go into production Q1-Q2CY2010. • Agency is making plans to ensure adequate capabilities in CDER to receive, process, and review SEND formatted datasets by the end of FY2010. • SEND pilot in CVM is ongoing.
Electronic Case Report From (eCRF) Pilot Obtain experience with the CDISC Operational Data Model (ODM) based CRFs.	While he FDA DSC pursues continued longer-term development of HL7 study data standards, as a near-term strategy to support drug review, CDER and CBER are re-evaluating the benefits of pilot testing an ODM based eCRF.	• The eCRF/ODM pilot was replaced by the HL7 Study Data initiatives because of the progress in the HL7 standards development. • The project continua ion is being evaluated.
Clinical Data Acquisition Standards Harmonization (CDISC CDASH) Clinical Data Acquisition Standards Harmonization	The CDASH consolidated final draft has been released for public comments. After the public review period of he consolidated final draft ends 14 May 2008, comments will be consolidated and addressed by the CDASH project team. Comments and responses will be posted on www.cdisc.org along with the final CDASH v1.0. The goal is to post the final CDASH version 1.0 by the end of 2nd Quarter, 2008.	• Comple ion of draft CDASH V 1.1 for bo h the internal CDISC review and the open public review. • Finalized the responses to the public review comments. • Publica ion of CDASH V 1.1. • Publica ion of CDASH User Guide (CDASHUG).
Product Stability Data Standard (eStability) Develop a method to provide stability data in a standard lectronic format so hat it may be viewed as it appears on paper or electronic paper by regulatory agencies and Industry.	Ballot eStability Release 2 as Normative Standard in May 2010. Secure funding for the development of Schematron (business rules).	• eStability Release 2 as Normative Standard passed ballot. • Stability Style sheet has been developed. • Scope includes development of a style sheet to accompany flat file to view he XML stability data file. • Individual centers are considering adoption/implementation of this standard
CDISC Analysis Data Model (CDISC ADaM) Provides a standard for transferring analysis datasets between sponsors and FDA.	No milestones noted on plan	• "CDISC ADaM Validation Checks" finalized. • Publica ion of the "CDISC ADaM Valida ion Checks". • Posting of the "The ADaM Basic data Structure for Time-to-Event Analyses" for public review.

Project Name and Description	*IT Plan Milestones*	*FY2010 Status*
Janus Improve FDA management of structured scientific data through the creation of a standards-based infrastructure hat supports he exchange and management of structured scien ific data about the products that the FDA regulates.	The system implementation stage of the Janus operational pilot (phase 3) began on Q2 CY2010. This phase included the assessment of Janus physical database design, automa ing the process of validation and data loading, and security enhancements. The system deployment stage of he Janus operational pilot (phase 3) is scheduled for CY 2013. This includes the installation package and guide, user support and software product documentation. Development of XForms and Style sheets as tes ing tools for the CDISC HL7 Study Data standards designed to exchange study data into Janus.	• NCI and FDA are working out the details of the contract to support he Janus operational pilot (phase 3). • Comparative Effectiveness Research project was initiated at FDA.
FDA Adverse Event Report System (FAERS) Will enable the FDA to improve the timelienss, accuracy, and usability of its product safety surveillance data by significantly reducing delays and errors associated with manual data entry and coding of paper reports.	Product Dictionary Requirements Document – September 2010 Prototype training: May 2010 Approve and Prioritize gap Requirements for Rel. 1 October 2010 Prototype Release 0.1 March 2010 Prototype Release 0.2 March 2011 FAERS Release 1.0 - CBER and CDER September 2011.	• First Prototype for FAERS was delivered to FDA with focus on CDER and CBER. • Conducted Prototype Training for CDER, CBER, and Data Entry. • Completed evaluation feedback from CDER and Data Entry based on Prototype Training. • Conducting evaluation feedback from CBER based on Prototype Training. • Completed Product Dictionary Requirements document. • Approval and prioritization of FAERS gap requirements for CDER is underway. • Conducting evaluation feedback from CBER based on Prototype Training. • Completed and received approval for the FAERS Boundary Document. • The FDA has re-planned the FAERS ini ia ive based on an OMB TechStat Review. • Creating all FAERS Planning documents based on the EPLC.
Sentinel System Long-term effort to create a national electronic system for monitoring FDA-regulated product safety.		The Agency believes that this Post-Market Safety program is not an IT initiative. The Sentinel program will be removed from the PDUFA IT plan, Annual IT Assessment, and Quarterly Industry Report.