



*The City of New York
Office of the Comptroller
Bureau of Financial Audit
EDP Audit Division*

WILLIAM C. THOMPSON, JR.
Comptroller

**Audit Report on the
Development and Implementation
of the Contract Data System by the
Department of Design and Construction**

7A02-063

June 5, 2002

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EXECUTIVE SUMMARY

Background

The Department of Design and Construction (DDC) uses in-house resources and private consultants and contractors to provide design and construction services related to: streets and highways; sewers; water mains; correctional and court facilities; cultural institutions; libraries; schools; and other public buildings, facilities and structures.

DDC hired Deloitte & Touche Consulting Group/DRT Systems (DRT) in April 1998 to design and develop its Contract Data System (CDS), a customized computer application to centrally maintain information on all DDC contracts. CDS assists DDC in managing the City's capital commitment plan, project schedules, and budgets. Phase I of CDS's development, implemented in November 1999, provides links from contract data to project and payment data in other DDC systems (i.e., the Project INFO, Contract Ledger, and PAYLOG systems). Phase II, implemented in June 2001, adds functionality related to lists of pre-qualified vendors and awarded and renewed contracts. Preliminary planning for Phase III began in November 2001 and will include vendor performance tracking and enhanced historical information on contracts.

Objectives

Our audit objectives were to determine whether:

- DDC followed a structured methodology for developing CDS;
- CDS meets users' needs;
- CDS allows for future enhancements and upgrades;
- users are satisfied with the system.

Scope and Methodology

Our fieldwork was conducted from October 2001 to March 2002. To achieve our objectives we reviewed and analyzed DDC's:

- *Project/Contract Info Functional Specifications;*
- *Project INFO Logical View Report;*
- *Info Graphical Interface Designs;*
- *User Review Results/System Corrections log;* and
- the CDS development and implementation plans.

In addition, we interviewed DDC officials, verified whether the system met design specifications, and conducted a user satisfaction survey.

Since the City does not have a formal Systems Development Methodology, we used the following as criteria for this audit:

- New York City Comptroller's Internal Control and Accountability Directive 18, "Guidelines for the Management, Protection and Control of Agency Information and Information Processing Systems" (Directive 18); and
- National Institute of Standards and Technology Special Publication 500-233, "A Framework for the Development and Assurance of High Integrity Software" (NIST).

This audit was conducted in accordance with generally accepted government auditing standards (GAGAS) and included tests of the records and other auditing procedures considered necessary. This audit was performed in accordance with the City Comptroller's audit responsibilities as set forth in Chapter 5, § 93, of the New York City Charter.

Results in Brief

DDC followed a structured methodology for developing CDS. The system, as developed, allows for future enhancements and upgrades. Phases I and II meet user needs, and users are generally satisfied with the system. However, DDC did not remove accounts of four inactive users from the system. Directive 18, § 8.1.2, states, "Active password management includes deactivation of inactive user accounts and accounts for employees whose services have terminated."

To address this issue, we recommend that DDC develop and implement a procedure to terminate inactive user accounts.

Agency Response

The matters covered in this report were discussed with officials from DDC during and at the conclusion of this audit. A preliminary draft was sent to DDC officials and discussed at an exit conference on May 14, 2002. On May 15, 2002, we submitted a draft report to DDC officials with a request for comments. We received a written response from DDC on May 30, 2002. DDC generally agreed with the audit's finding and recommendation, stating that "DDC is pleased with the findings of the report and agrees with the audit's one recommendation."

The full text of DDC's comments is included as an Addendum to this report.

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INTRODUCTION

Background

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DDC hired Deloitte & Touche Consulting Group/DRT Systems (DRT) in April 1998 to design and develop its Contract Data System (CDS), a customized computer application to centrally maintain information on all DDC contracts. CDS assists DDC in managing the City's capital commitment plan, project schedules, and budgets. Phase I of CDS' development, which was implemented in November 1999, provides links from contract data to project and payment data in other DDC systems (i.e., the Project INFO, Contract Ledger, and PAYLOG systems). Phase II, implemented in June 2001, adds functionality related to lists of pre-qualified vendors and awarded and renewed contracts. Preliminary planning for Phase III began in November 2001 and will include vendor performance tracking and enhanced historical information on contracts.

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**OFFICE OF THE COMPTROLLER
NEW YORK CITY**

DATE FILED: June 5, 2002

FINDINGS AND RECOMMENDATIONS

DDC followed a structured methodology for developing CDS. The system, as developed, allows for future enhancements and upgrades. Phases I and II meet user needs, and users are generally satisfied with the system. However, DDC did not remove inactive users from the system.

System Development Life Cycle

The structured methodology used by DDC involved a System Development Life Cycle consisting of several phases—the Definition and Analysis Phase, the Design and Programming Phase, the Software Verification and Validation Phase, and the Operation Phase.

Definition and Analysis Phase

The end result of the Definition and Analysis Phase is a document that describes the performance requirements of the system, such as the details of all deliverables, including hardware, software, training, system documentation and warranties. DDC's document, *Project/Contract Info Functional Specification*, met these requirements.

Design and Programming Phase

The end result of the Design and Programming Phase is the system architecture or the technical design specification document that is used by project programmers to construct the application. DDC's *Project/Contract Info Functional Specification*, *Project INFO Logical View Report* and its *Info Graphical Interface Designs* describes CDS in technical terms. We compared the deliverables required of DRT to the deliverables defined by these documents and concluded that all the deliverables were provided. Table I, following, shows these specific deliverables.

Table I

CDS Specific Deliverables

Specific Deliverables	Provided
Design and definition of fields for a new contract table	Yes
Design and definition of fields for a new vendor table	Yes
Design and definition of fields for a new task order table	Yes
Design and definition of fields for any new fields for the project table in Project INFO	Yes
Recommendation on developing a new capital project ID table separate from the project table in Project INFO	Yes
Transformation schema for reconciling the vendor, project, and capital project ID, contract, with task order tables from the various system interface databases, and Bidders List applications.	Yes
New tables for vendor, project, capital project ID, contract, and task order	Yes
Reconciled data-filled tables for vendor, project, capital project ID, contract, and task order	Yes
Specifications for modification of front ends and back ends of the above-referenced applications to use data from the new tables	Yes
Specifications for modification of front end and back end of the ACCO database or other front end, if recommended, for input of contract and vendor data	Yes
Specifications development of a new link between Project INFO and the contract information	Yes
Transformation schema for linking projects to contracts. Specifications for any system changes in Project INFO to allow users to validate links	Yes
Procedures for validation of links of projects to contracts	Yes

Software Verification and Validation Phase

The Software Verification and Validation Phase involves testing all system components to ensure that they work individually and together as intended and according to specifications. DDC's *User Review Results/System Corrections* log indicated that system testing for Phase I started in September 1999 and was completed in October 2000, and Phase II testing was performed in March 2001. We found that user comments and problems were documented in the log, and we verified that these issues had been resolved.

Operation Phase

The Operation Phase occurs when the new system is turned over to users for day-to-day operations. We confirmed that DDC implemented Phases I and II of CDS, and determined through our user satisfaction survey that users are generally satisfied with the system.¹ The results of our survey are as follows:

- 76% of the users found it very easy to connect to CDS;
- 76% of the users found it easy to enter data into CDS;
- 100% of the users found the data from CDS to be generally accurate;
- 76% of the users found that the CDS reporting features met their needs;
- 95% of the users found it easy to work on the information displayed on the CDS screens;
- 85% of the users found that CDS is easy to use; and
- 85% of the users were satisfied with CDS.

Other Issue

Inactive User Accounts

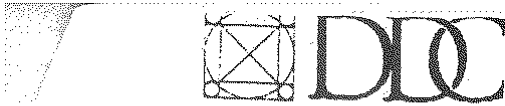
DDC did not remove inactive users from the system. We examined the user IDs of the 32 users selected for the user satisfaction survey and found three accounts that had not been used for more than two years but were never removed from the system. A fourth account was still active even though its assigned user was no longer employed by the agency. Directive 18, § 8.1.2, states, "Active password management includes deactivation of inactive user accounts and accounts for employees whose services have terminated."

¹ We randomly selected 32 out of 96 users to complete a CDS User Satisfaction Survey. However, only 21 surveys were completed. Eleven surveys were not completed for the following reasons: four employees refused to respond; three were not regular users of CDS; one was out of the office; one was on jury duty; one no longer worked for DDC; and one was only recently hired by DDC and had not received training.

Recommendation

1. DDC should develop and implement a procedure to terminate inactive user accounts.

Agency Response: “DDC agrees with this recommendation and has reviewed and updated its account files to ensure that only authorized users have access to the systems. The department’s current policy is for the Personnel unit to immediately notify the Information Technology (IT) unit once an employee leaves DDC. The departed employee’s log-on privileges are terminated immediately by the IT network staff. DDC’s written procedures on user access have recently been updated and distributed to all appropriate staff.”



ADDENDUM

City of New York Department of Design and Construction

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May 28, 2002

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New York, New York 10007-2341

Re: Audit Report on the Development and Implementation
of the Contract Data System by the Department of
Design and Construction # 7A02-063

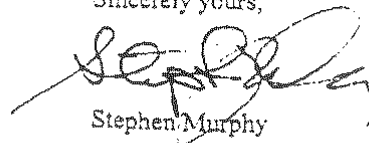
Dear Mr. Thompson:

Thank you for the opportunity to respond to the draft "Audit Report on the Development and Implementation of the Contract Data System by the Department of Design and Construction" prior to its public release. The Department of Design and Construction (DDC) is pleased with the findings of the report and agrees with the audit's one recommendation. Listed below is that recommendation with DDC's corrective action plan.

Recommendation # 1: "DDC should develop and implement a procedure to terminate inactive user accounts."

DDC's Response: DDC agrees with this recommendation and has reviewed and updated its account files to ensure that only authorized users have access to the systems. The department's current policy is for the Personnel unit to immediately notify the Information Technology (IT) unit once an employee leaves DDC. The departed employee's log-on privileges are terminated immediately by the IT network staff. DDC's written procedures on user access have recently been updated and distributed to all appropriate staff.

Sincerely yours,



Stephen Murphy

cc: Kenneth Holden
Maria Guccione