



Database-Driven Cost Estimating

Overview

This project built an SQL Server database system for cost estimating in the construction industry.

File View Window Records Database

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 From Glen Cooper Tel 604-333-3333 Fax Email glen.cooper@manager.com
 Facility Manager John Doe Tel 604-111-1111 Fax 604-111-1111 Email john.doe@facility.com
 Building Name MAPLE COMMUNITY CENTRE Date
 Project Name Sample Project Building No 011
 Project No 00000
 Estimate

Round Cover Page/Estimate Summary to hundreds place

Cover Page Estimate Summary Design Costs Project Management Construction Costs Completion Costs Contingency & Taxes

Project Estimate:

P1000 Planning, Design & Consultants	\$16,200.00
P1000 Planning, Design & Consultants	\$8,800.00
P1200 Project Management	\$7,400.00
P2000 Construction Costs	\$39,500.00
P2100 Building Construction	\$39,500.00
P3000 Completion Costs	\$13,000.00
P3100 Project Commissioning	\$8,700.00
P3200 Furniture & Equipment	\$4,000.00
P3300 Miscellaneous Costs	\$0.00
P3400 Central Administrative Overhead	\$300.00
P4000 Contingency	\$6,600.00
P8000 Taxes	\$1,300.00
TOTAL PROJECT ESTIMATE:	\$76,600.00

Level of Estimate:

Class 'C/D' (Project Budget)
 Based on relatively little data available for the study, maximum level of uncertainty. Price established by experience and estimating judgment. Generally called a "ball park figure". Used to determine the economic and technical feasibility of the proposed project.

Class 'B' (Design Check)
 Based on designs derived from scope consultation with the Client and Project Manager. The estimate is based on drawings completed to the 75% level, equipment details, quantitative information, and a mixture of historical and unit prices for labour, material and equipment.

Class 'A' (Pre-Construction Check)
 Based upon a well-defined scope, completed design drawings, data, systems design and specifications.

Exclusions: (Estimator to check applicable boxes)

<input type="checkbox"/> Security or Temporary Enclosure	<input type="checkbox"/> Security System
<input type="checkbox"/> Overtime Work	<input type="checkbox"/> Fire Safety Plan
<input type="checkbox"/> Mechanical, Electrical Shutdowns	<input type="checkbox"/>
<input type="checkbox"/> Shop & Fabrication Drawings	<input type="checkbox"/>

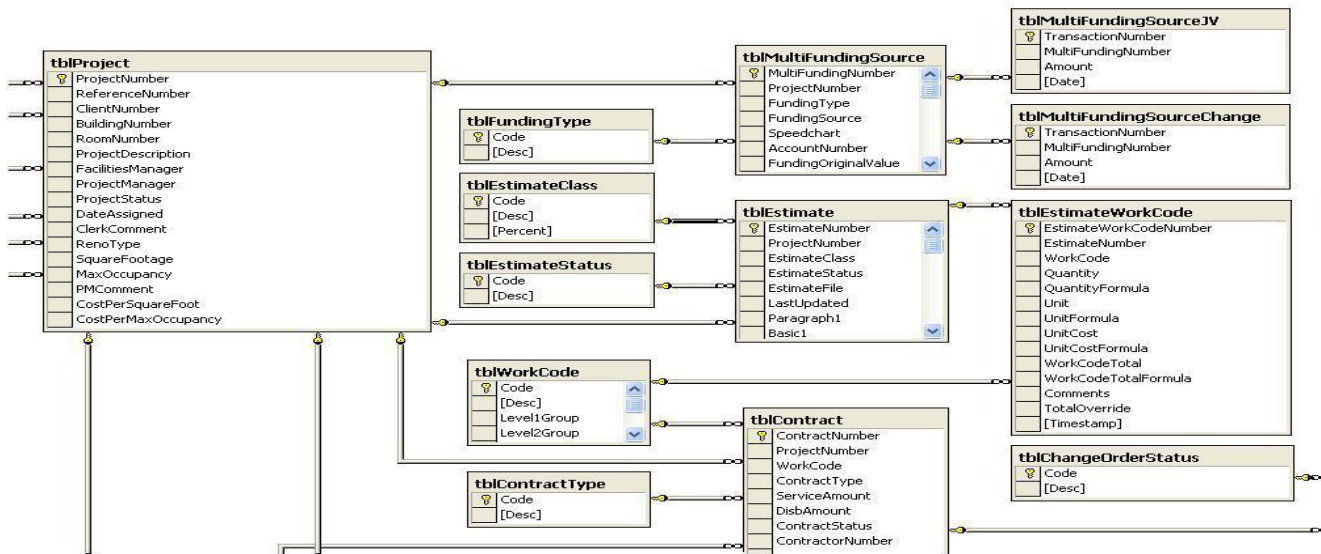
Estimator's Comments:

Save Costs Retrieve Costs Clear Costs Refresh Costs New entry Delete Close

Record: 1 of 1
 Version: 30-Apr-2008

Users are presented with a Microsoft Access front-end to SQL Server that acts like a spreadsheet, but where its cells are stored on a back-end database for subsequent retrievals. Consequently, its underlying tables may be integrated with project management and other database systems.

One of the key advantages to this approach is the presence of a well-defined database model that uses server-based restrictions to automatically enforce data integrity¹.



Various server triggers insure that all information in related tables is seamlessly updated whenever the data in one of them changes, no matter what application maintains that information. For example, if a funding change is updated by a Web app, then the following trigger on the funding change table automatically updates the table of all fundings:

```
CREATE TRIGGER TRG_tblMultiFundingSourceChange_Update ON
[dbo].[tblMultiFundingSourceChange]
FOR UPDATE
AS
BEGIN
-- Declarations
DECLARE @MultiFundingNumber    INT
DECLARE @AmountInserted        MONEY
DECLARE @AmountDeleted         MONEY

-- If more than one update, return
IF @@ROWCOUNT <> 1
    RETURN

-- Don't count
SET NOCOUNT ON

-- Get foreign key value and amount changed
SET @MultiFundingNumber = (SELECT MultiFundingNumber FROM INSERTED)
SET @AmountInserted = (SELECT Amount FROM INSERTED)
SET @AmountDeleted = (SELECT Amount FROM DELETED)

-- Update foreign table
UPDATE tblMultiFundingSource
SET
FundingCurrentValue = dbo.fnAddReal(FundingCurrentValue,@AmountInserted-
@AmountDeleted)
WHERE
(
MultiFundingNumber = @MultiFundingNumber
)
END
```

¹ You can't do this with spreadsheets.