



Trns*port Users Group
Austin, Texas Nov.5th - Nov.9th



Quantities Manager and the Interface to Trns•port

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Minnesota DOT**

Moving Minnesota

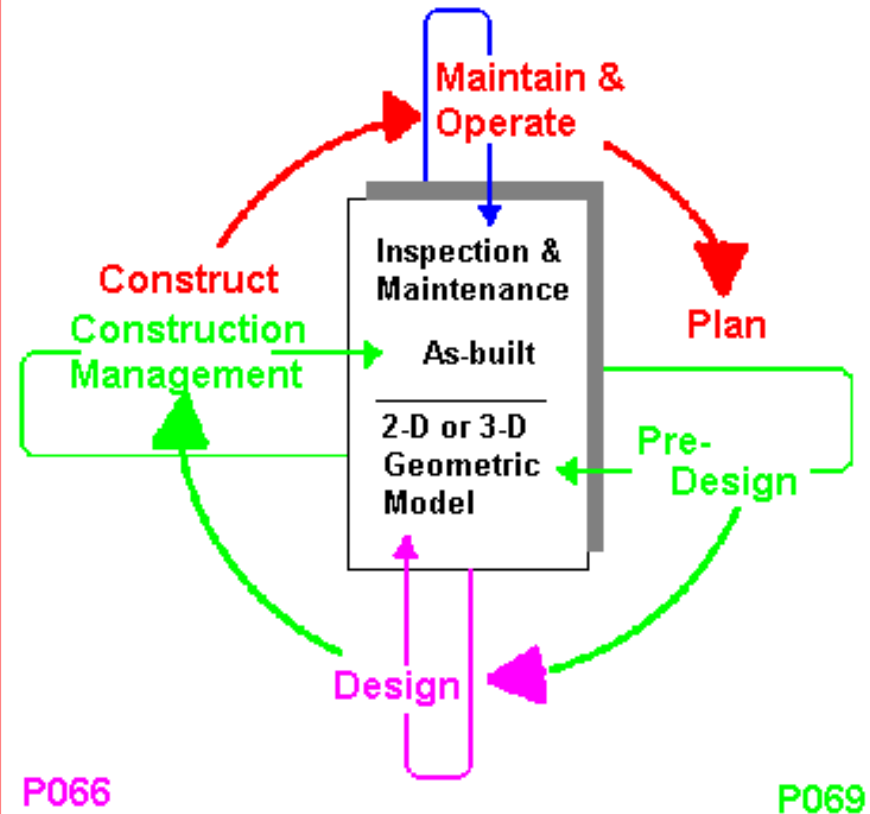
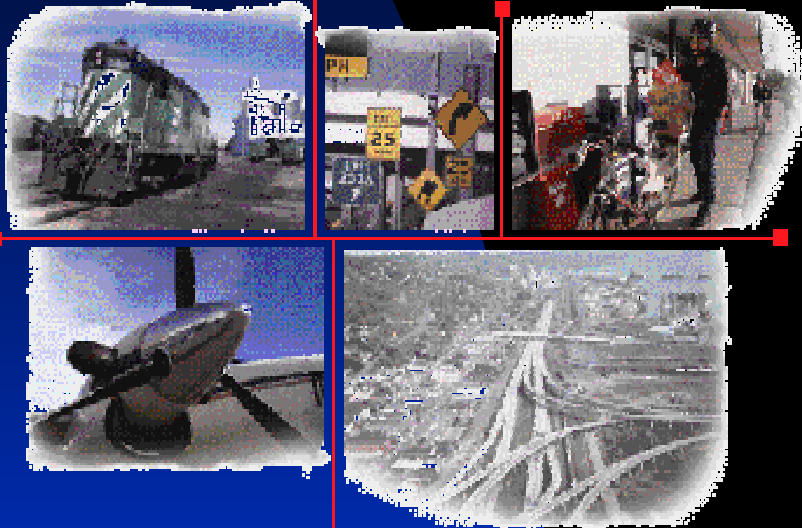


Quantities Manager and the Interface to Trns•port

- Mn/Dot P069 project
- Overview of AecXML
- Quantities Manager
 - “ Developing the Quantities”
- Trns•port -> Quantities Manager Interface



Mn/Dot P069 Project



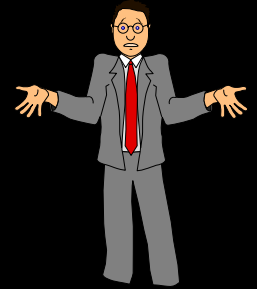


P069



Design Data → Trns•port

How do YOU currently get design information into Trns•port?



- Create data file using CSV
- Manually re-enter data into Trns•port
- Use automated systems
 - may require data entry
 - error validation?



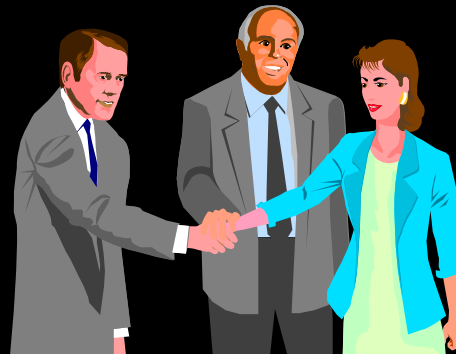


Facilitating Communications Via P069

GEOPAK

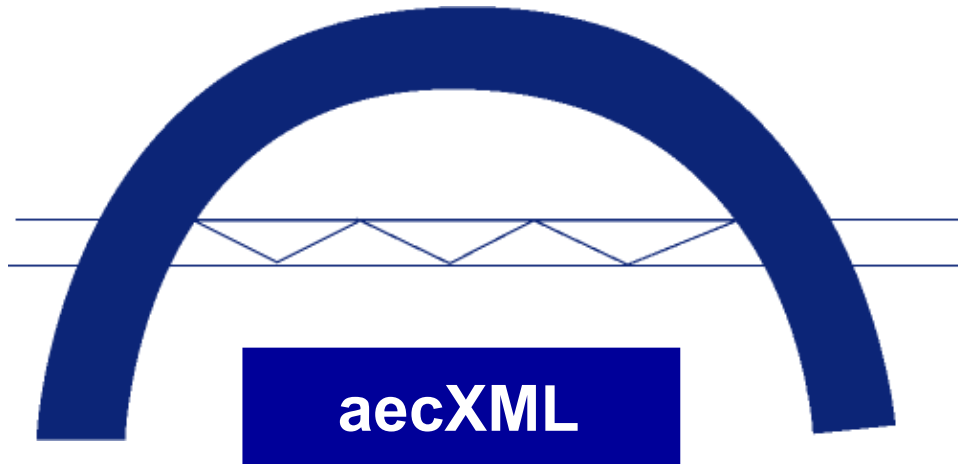
Minnesota
DOT

INFO TECH



Bridging The Gap

Design





What is aecXML?

E(xtensible) Markup Language

- ❑ Standard Internet Language
- ❑ Provides automated exchange without a substantial coding effort.
- ❑ It is extensible.





Benefits of aecXML

“XML is the Future”

- ❑ Promotes Standardization.
- ❑ Promotes **Collaboration**.
- ❑ Keep it simple.
- ❑ Vocabulary matters.
- ❑ Connections between disparate applications.
- ❑ Allows for sorting, searching and updating.
 - ❑ Example (Engineers Estimates)





aecXML - Infrastructure

- ❑ Infrastructure Working Group established June 2000 North Carolina.
- ❑ Working group within the aecXML umbrella which was established in 1999 by Bentley systems.
- ❑ Focus of the Infrastructure Working Group
 - ❑ Roads, bridges, airports, ports, railroads, bikeways, dams, channels, flood control, land development, storm sewers and sanitary sewers.



aecXML - Infrastructure

- Oct 2000 International HEEP use cases and Staging Areas defined.
- Schema staging areas established along with facilitators and chairs





aecXML - Infrastructure

- Goal of Quantities and Pricing Staging Group
 - Project design quantities keyed to pay items are transferred via XML to a cost estimation system that expresses data in terms of pay items and unit costs.



aecXML - Infrastructure

- August 28-29, 2001 St. Louis
- Review quantities and pricing schema
- Schema changes made to version 0.31
- June 4th, 2002 v0.33 schema posted





aecXML - Infrastructure

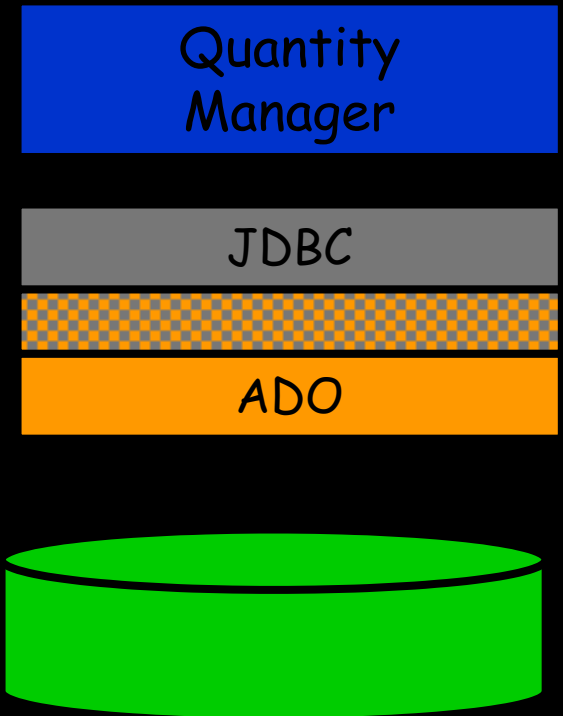
- ❑ Transfer and cross reference data between disparate applications
- ❑ GEOPAK Design & Computation Manager
Automated Quantities
- ❑ Trns•port





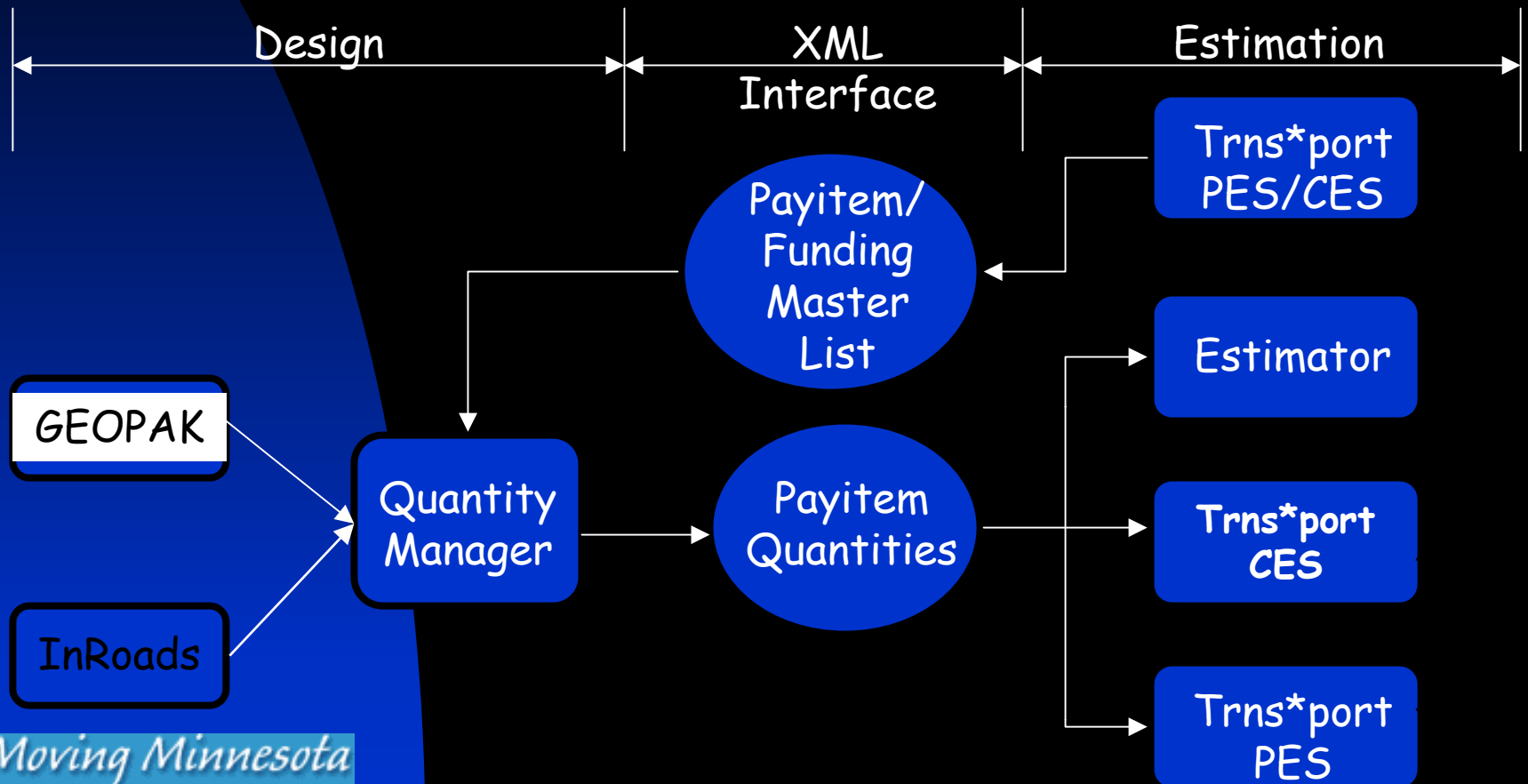
Choice of DBMS

- ❑ Microsoft Access
- ❑ SQL Server
- ❑ Oracle
- ❑ Others...





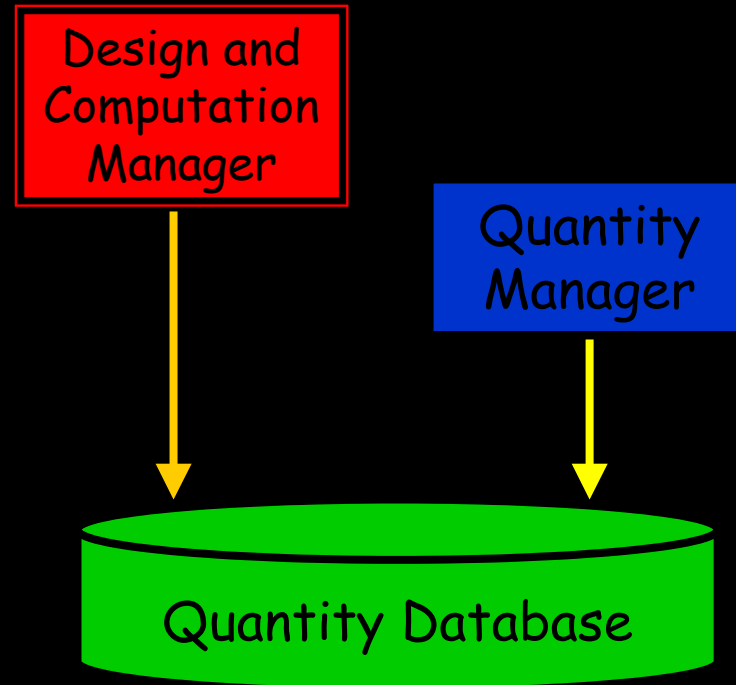
Quantities Manager





Quantities Manager

- **Design and Computation Manager**
- Compute
- **Standard units or 3PC**
- **Direct connection to database**
 - Create
 - Append
 - Update





Quantities Manager

- Java application (independent of MicroStation)
- Standalone Application





Payitem List in Trns•port PES/CES

The screenshot shows the Trns-port CES application window. The title bar reads "Trns-port CES". The menu bar includes "File", "Edit", "View", "Utilities", "Window", and "Help". The toolbar contains various icons for file operations and navigation. The main window displays a table titled "Items" with the following columns: Spec Year, Item Number, Short Description, Item Unit, LS Unit, Item Type, and Item Class. The table contains 20 rows of data, with the row for Item Number 2999509/00001 highlighted in blue.

Spec Year	Item Number	Short Description	Item Unit	LS Unit	Item Type	Item Class
95	2581602/00027	PAVT MSSG (STRAIGHT ARROW) REM POLY PREF	EACH		600	2581
95	2581602/00028	PAVT MSSG (TRAN ARROW) REM POLY PREF	EACH		600	2581
95	2581602/00029	PAVT MSSG(LT-RT-THRU ARROW)REM POLY PRE	EACH		600	2581
95	2581602/00030	PAVT MSSG (RT-THRU ARROW) REM POLY PREF	EACH		600	2581
95	2581602/00031	PAVT MSSG (LT-THRU ARROW) REM POLY PREF	EACH		600	2581
95	2581603/00010	MARKING (SPECIAL)	M		600	2581
95	2581603/00020	REMOVABLE PREFORMED PLASTIC MASK (BLACK	M		600	2581
95	2581603/00030	REMOVABLE FOIL MARKING	M		600	2581
95	2999509/00001	END TAPE	LS		600	2999
95	QAQC1STITEM	BITUMINOUS MATERIAL FOR PRIME COAT	L		600	2358
88	1234567890	12345	LS	EACH	200	201
88	123456789012	test for hybrid lump sum	TEST	TEST	200	000
88	1234567890300	test for hybrid lump sum	TEST	TEST	200	000
88	2011601/00001	CONSTRUCTION LAYOUT STAKING	LS		600	2011
88	2011601/00002	TUNNEL CONSTRUCTION LAYOUT STAKING	LS	LS	600	2011
88	2011601/00003	CONSTRUCTION SURVEYING	LS		600	2011
88	2011601/00010	VIBRATION MONITORING	LS	LS	600	2011
88	2011601/00020	REVISED BRIDGE PLANS	LS		600	2011
88	2011601/00040	DESIGN	LS		600	2011
88	2013601/00010	SURVEY EQUIPMENT	LS		600	2013
88	2013601/00015	TESTING EQUIPMENT	LS		600	2013



Fund Source List in Trns•port CES/PES

The screenshot shows the 'Trns-port CES' application window. The title bar reads 'Trns-port CES'. The menu bar includes 'File', 'Edit', 'View', 'Utilities', 'Window', and 'Help'. The toolbar contains various icons for file operations. The main window displays a table titled 'Funds' with the following columns: 'Fund Code', 'Funding Part Pct.', 'Fund Description', and 'Fund Prefix'. The table lists 18 different fund sources with their respective codes, percentages, descriptions, and prefixes.

Fund Code	Funding Part Pct.	Fund Description	Fund Prefix
A0007	80.0000	TIMBER BRIDGE CONSTRUCTION GRANTS	TBCG
A0029	80.0000	SURFACE TRANSPORTATION PROGRAM	STP
A0030	90.0000	SURFACE TRANSPORTATION PROGRAM	STP
A0031	80.0000	BRIDGE REPLACEMENT STP FUNDS REQUESTED	BRSTP
A0032	80.0000	NATIONAL HIGHWAY SYSTEM FUNDS REQUESTED	NH
A0033	80.0000	BRIDGE REPLACEMENT NH FUNDS REQUESTED	BRNH
A0035	80.0000	TRANSPORTATION ENHANCEMENT ACTIVITIES	TEA
A0041	80.0000	HIGH PRIORITY PROJECT FUNDS REQUESTED	HPP
A0042	90.0000	INTER MODAL URBAN DEMO FUNDS REQUESTED	IDF
A0043	90.0000	INTERSTATE 3R MAINT FUNDS REQUESTED	IM
A0046	100.0000	EMERGENCY FUNDS REQUESTED	ER
A0052	100.0000	STATE FUNDS	STATE
A0053	100.0000	CITY FUNDS	CITY
A0054	100.0000	CITY FUNDS	CITY
A0055	100.0000	LOCAL FUNDS	LOCAL
A0061	100.0000	MAINTENANCE FUNDS	MAINT
A0065	100.0000	PUBLIC FOREST HIGHWAY	PFH
A0068	100.0000	PUBLIC LANDS HIGHWAY	PLH

The taskbar at the bottom shows the system tray with the Start button, taskbar buttons for 'Trns-port CES', 'DPS Status Mon...', and 'Microsoft Power...', and system icons for network, volume, and power, along with the time '5:04 PM'.



Exporting Payitem List to aecXML

The screenshot shows the Trns-port PES software interface. The main window displays a list of projects with columns for Project Number, Federal/State Project Number, and Description. Overlaid on this is a 'Processes' dialog box with the following options:

- Export Check Out Projects to Estimator
- Export Copy Projects to Estimator
- Export Reference Information (highlighted)
- Generate Bid-Based Prices

The 'Export Reference Information' dialog box is open, showing 'Page 1' and the following settings:

- Fund Reference Data:
- Item Reference Data:
- Spec Year: 00 (circled in yellow)

Buttons at the bottom of the dialog include 'Submit', 'Parameters', and 'Cancel'. The status bar at the bottom of the main window shows 'Ready'.

Export By
Spec Yr.
00
01



Importing Pay Items to QM (Quantities Manager)

New Payitem Properties - Inserting in Category: Mainta...

Payitem Name: 2433516/00110

Description: ANCHORAGES TYPE REINF BARS

Unit Cost:

Unit: EACH

Total Rounding: 0.00

Select Payitem

Search Mask: *

Payitem	Description
2331601/90350	THICK BITUMINOUS WEARING COURSE
2331601/90400	THICK BITUMINOUS WEARING COURSE
2331601/90500	THICK BITUMINOUS WEARING COURSE
2331601/90550	THICK BITUMINOUS WEARING COURSE
2331601/90600	THICK BITUMINOUS WEARING COURSE
2331601/90700	THICK BITUMINOUS WEARING COURSE
2331602/00010	BITUMINOUS MATERIAL FOR MIXTURE

Import

Filter by unit system, spec year and payitem name



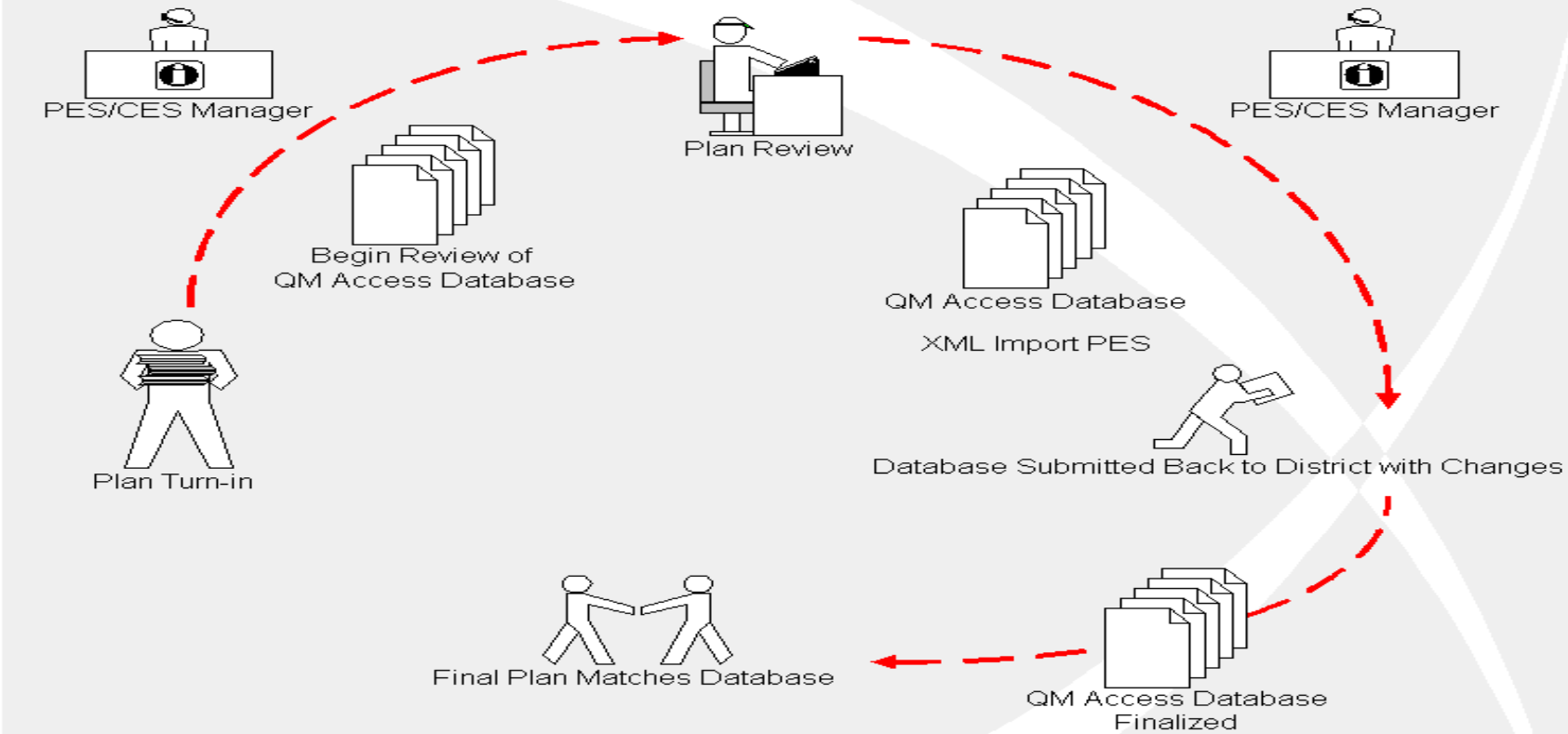
Importing Payers into QM (Quantities Manager)

Select Payers

Payer	Description
M1872	ARDEN HILLS MUNICIPAL FUNDS
M1881	LAKEVILLE MUNICIPAL STATE AID FUNDS
M1882	LAKEVILLE MUNICIPAL FUNDS
M1891	MAPLE GROVE MUNICIPAL STATE AID FUNDS
M1892	MAPLE GROVE MUNICIPAL FUNDS
M1901	MORRIS MUNICIPAL STATE AID FUNDS
M1902	MORRIS MUNICIPAL FUNDS
M1904	COLLYER MUNICIPAL STATE AID FUNDS

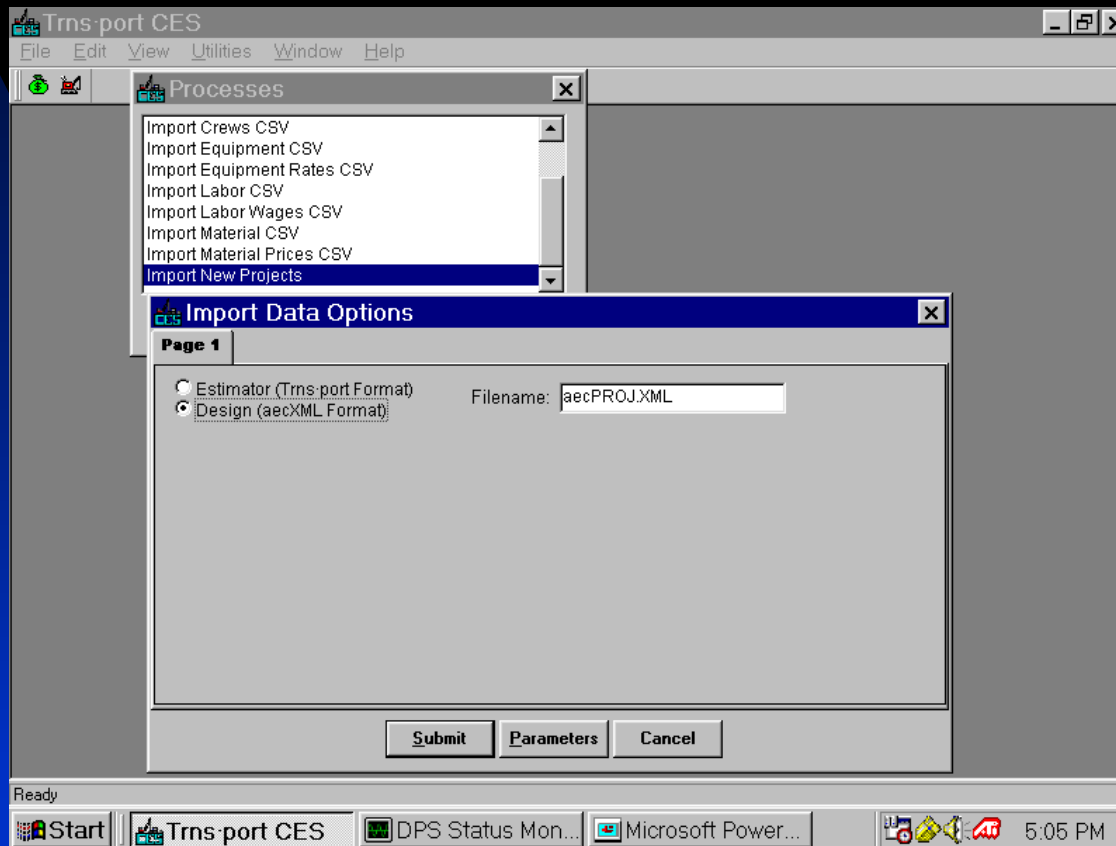
Import

Design to Trns*port Process Flow





Importing an aecXML Design Project into Trns*port PES/CES





Trns-port PES

File Edit View Utilities Window Help

1 [Icons]

Projects

Project Number	Federal/State Project Number	Description
010214	91-595-13/TEAX 6299(068)	RESTORE TRAIN CARS
010215	47-599-16 / BROS4701(185)	CONSTRUCT BRIDGE # 47527
010216		CONTROL SYSTEM - PHASE
010217		34TH ST. SOUTH
010218		ENT & APPROACHES
010219		WALKING BRIDGE REHAB
010220		BIT SURFACE, DRAINAGE &
010221		BIT SURFACE, STORM SEV
010222		E 27A71 AND APPROACH (
010223		AND STREET OVERLAY
010224		
010225		BRIDGE 02566, GRADE, AGC
010226	165-999-01/ERMN 98(201)	STREET RESTORATION IN SAINT PETER
010227	05-596-01 / STPX 0501(078)	GRADING, BASE, BITUMINOUS SURFACE
010228	171-080-01 / TEAX 6901(026)	CHESTNUT STREET STREETScape
010229	27-030-06 /STPX2799(272)	SIGNAL PAINTING
01068	31-631-01/BROS 3199 (178)	BR. 31J05 (PRECAST CONCRETE BOX CULVEF
10016	57-616-01 / STPF 5799(054)	GRADING, BASE, BITUMINOUS SURFACING, BR
1504-10		1504-10

Copy Project

Page 1

Copy Project Control Number: 1504-10

New Project Control Number:

OK Cancel

Ready



Project Quantities in Trns•port PES/CES

Trns•port CES

File Edit View Utilities Window Help

Job xmlimport

General Variables Cost Groups Categories **Items** Programs Funding Attachments

Line Number	Item	Category	Quantity	Description	Units	Unit Price
0010	2013602/00050	0005	1.0000	EP TOXICITY TEST	EACH	
0020	2013602/00028	0004	853.7440	CELLULAR EMERGENCY CALL BOX	EACH	
0030	2013602/00031		1,257.3750	SPARE CALL BOX TERMINAL	EACH	
0040	2013602/00033		832.0700	DISPATCHING CONSOLE	EACH	
0050	2013602/00051			TCLP TEST	EACH	
0060	2013602/00025			CELLULAR MOBILE TELEPHONE	EACH	
0070	2013602/00060			TECTIVE COVERALL	EACH	
0080	2013607/00009			& DISPOSAL OF HAZARDOUS WCY		
0090	2013602/00020			ILM THICKNESS GAUGE	EACH	
0100	2013602/00035			MENT SHELTER	EACH	
0110	2013602/00061	0002		TECTIVE COVERALL	EACH	
0120	2013602/00010	0001	3.0000	HELD RADIO	EACH	
0130	2013602/00022	0001	5,454.8470	WEATHER SENSOR AND CABL	EACH	
0140	2013602/00030	0001	8,863.9860	CALL BOX TERMINAL	EACH	
0150	2013602/00032	0001	16,418.3330	BASE STATION EQUIPMENT	EACH	

WOW!



Naming Conventions when Transporting to Trns•port

Data	Restrictions
Project Names	≤ 13 characters
Funding Rules	> 1 and < 9999
Phases	DesignEstimate
Quantity Value	Maximum of 999,999,999.999
Pay Items	Must Exist in Trns•port
Payers	Must Exist in Trns•port



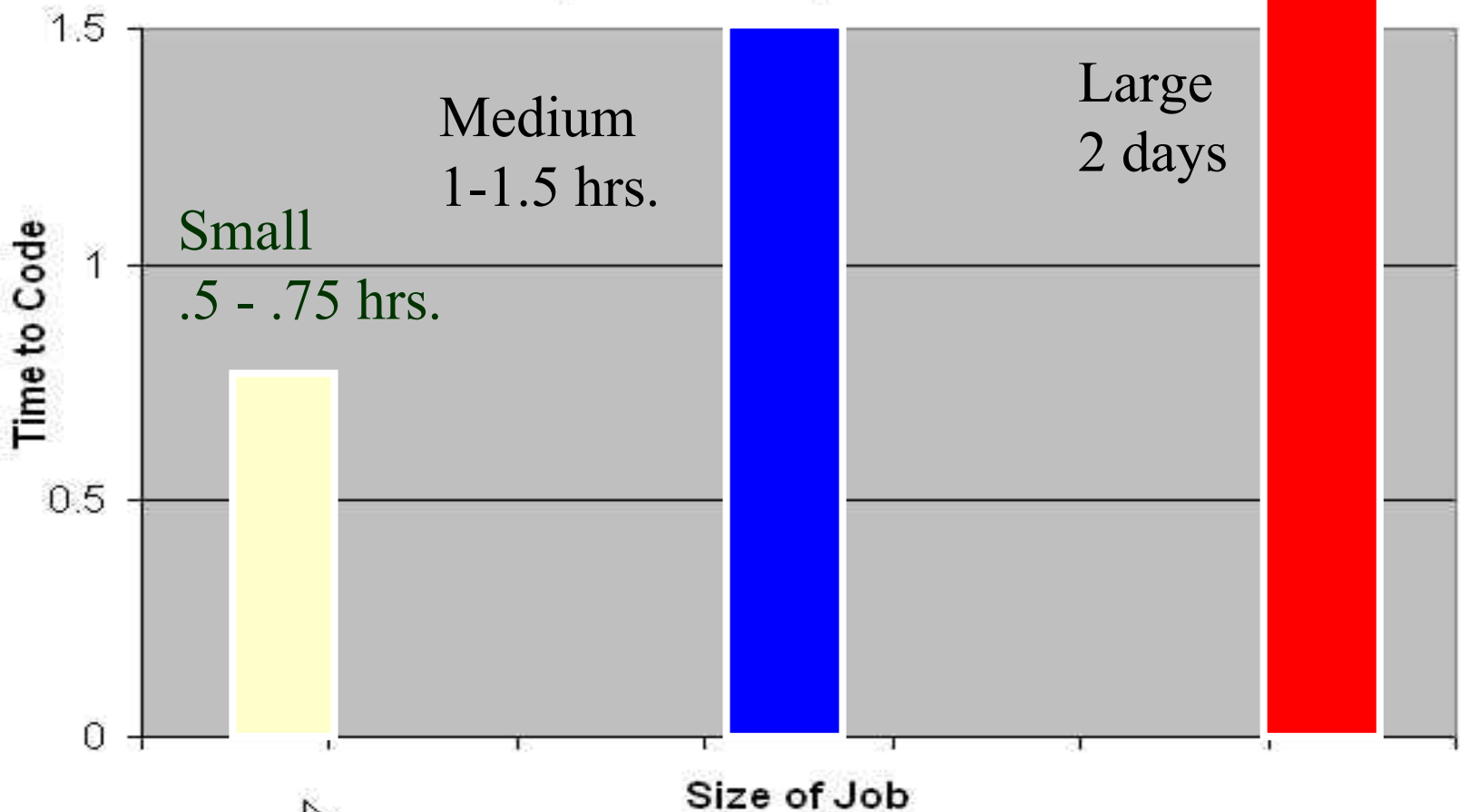
Benefits

- Major time savings
- Eliminate manual data entry
- Eliminate data redundancy
- Eliminate human error
- Promotes Standardization
- Utilizes an International Standard



Trns•port time savings

Pay Item Key-in Times





References

- XML.com homepage
 - ◆ www.xml.com
 - ◆ www.w3c.org
 - ◆ www.aecxml.org
 - ◆ www.geopak.com
 - ◆ www.cloverleaf.net
 - ◆ <http://www3.dot.state.mn.us/p069>
 - ◆ Trns•port Users Guide 5-55 & 5-52

