

**INTEGRATED PROJECT MANAGEMENT MODEL
“THE ROSETTA MODEL”**

**“As a project unfolds, it is possible to provide online, on time, from anywhere
instant, precise cost and schedule information delivered in each stakeholder’s
familiar format”**

**by Mike Milinusic, P.Eng., MBA
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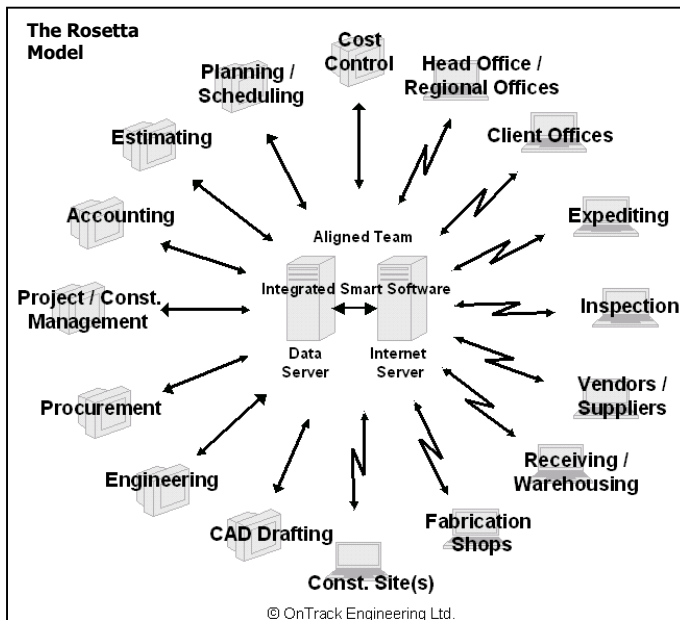
**46TH ANNUAL MEETING OF AACE INTERNATIONAL
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INTRODUCTION

Amalgamating today's Internet technology with the project management body of knowledge, it is possible as any project unfolds to provide online, timely, from anywhere instant, precise cost and schedule information and even deliver this in each stakeholder's familiar format! The instant availability of the complete fully integrated project data benefits all stakeholders as duplication is eliminated, trust is fostered, and timely informed decisions are enabled. As a result, costs are reduced and the project is able to proceed on schedule and within budget.

This "Rosetta" Project Management Model translates native information into interpretable reports. By simulating a project from start to completion, and by using selected reports and illustrations, this presentation demonstrates how the "Rosetta" model meets the varied needs of the many stakeholders.

THE ROSETTA MODEL



The Rosetta Model's core elements - an aligned project team, smart software, modern communication, and data processing hardware - link together for the execution of projects. The more powerfully these elements are linked together, the more efficiently the project can be managed as each element supports and reinforces the others. For example: Using smart software that requires only single entry data, the project team members are empowered and guided (by the Model) to function collaboratively and to follow


procedures. In this process they rapidly learn to depend upon and to trust each other, and therefore to work synergistically on the project. Having instant communication of data, particularly from remote locations boosts the dissemination rates and the control of the project. As part of this aligned team, and critical to the success of this Model, is the involvement of senior management by implementing uniform policies and procedures.

PROJECT SIMULATION USING THE ROSETTA MODEL

To briefly demonstrate the value and ease of use of this Model, the chronological order of a project's evolution is followed. A picture is worth a thousand words; numbers are worth even more. Please follow the procession of the data presented in the illustrations.

Once the estimate has been prepared it is recast on a spreadsheet into a cost control format, reflecting the project execution and identifying all the work breakdown structures. From the spreadsheet this data is imported. Here is a sample cost report at day zero:

Cost Reports Day Zero



SUMMARY COST REPORT
By Client 1 and Area

Project #: AACE_MAR02
Data Date: 2001.12.31
Print Date: 2001.03.02
Currency: CDN \$

AACE TEST Start Date: 2000.11.01 Previous End Date: 2001.02.28 Current End Date: 2001.12.31

Client 1	Area	COST CODES Description	BUDGET			COSTS			FORECAST		VARIANCE (N=K-D)	
			Original (A)	Transfers (B)	Scope Changes (C)	Current Target (D=A+B+C)	To Date Committed (G)	To Date Incurred (H)	To Date Approved (I)	To Complete (J)		Final Estimated (K)
AFE1	1B	2 - 28 BATTERY	101,000	0	0	101,000	0	0	0	101,000	101,000	0
AFE1		FACILITIES	101,000	0	0	101,000	0	0	0	101,000	101,000	0
AFE2	2B	2 - 28 EXPANSION	50,000	0	0	50,000	0	0	0	50,000	50,000	0
AFE2		PIPELINES	50,000	0	0	50,000	0	0	0	50,000	50,000	0
TOTAL			151,000	0	0	151,000	0	0	0	151,000	151,000	0
			% 100.00			% 100.00	% 0.00	% 0.00	% 0.00	% 100.00	% 100.00	% 0.00

By Item

AACE TEST Start Date: 2000.11.01 Previous End Date: 2001.02.28 Current End Date: 2001.12.31

Item	Description	BUDGET			COSTS			FORECAST		VARIANCE (N=K-D)		
		Original (A)	Transfers (B)	Scope Changes (C)	Current Target (D=A+B+C)	To Date Committed (G)	To Date Incurred (H)	To Date Approved (I)	To Complete (J)		Final Estimated (K)	
100	SITEWORK	6,000	0	0	6,000	0	0	0	6,000	6,000	0	
200	BUILDINGS	95,000	0	0	95,000	0	0	0	95,000	95,000	0	
300	STRUCTURAL STEEL	8,000	0	0	8,000	0	0	0	8,000	8,000	0	
522	PIPE & FITTINGS	15,000	0	0	15,000	0	0	0	15,000	15,000	0	
523	VALVES	10,000	0	0	10,000	0	0	0	10,000	10,000	0	
650	INSTRUMENTATION	17,000	0	0	17,000	0	0	0	17,000	17,000	0	
TOTAL			151,000	0	0	151,000	0	0	0	151,000	151,000	0
			% 100.00			% 100.00	% 0.00	% 0.00	% 0.00	% 100.00	% 100.00	% 0.00

This example, shown by both client breakdown and item, is the first illustration of how the same data can be presented differently. For the client, it is shown by facility and expenditure approval; for the project manager it is presented by commodity. Note that while the report varies in its format, it remains true to each of the classical cost report details and thus includes cost codes, description, original budget, transfers and changes, current target, committed to date, incurred and approved for payment, then to cost to complete, at completion, and the variances.

Schedule Day Zero

AACE TEST Start Date: 2000.11.01 End Date: 2001.12.31


RFQ #	Description	RFQ Date Planned	RFQ Date Issued	Bid Closing	Sent For Approval	Approved	PO Date Planned	PO Date Issued	PO #	LeadTime (days)	Req'd on Site Date	Variance or Go To
R-003	Control Building	2001.01.10	..	..	..	..	2001.02.15	..	Q1002	30	2001.03.28	-36
R-004	Pipe & Fittings	2001.02.09	..	..	..	..	2001.03.10	..	Q1004	30	2001.04.19	-11
R-005	Pipe & Fittings	2001.03.11	..	..	..	..	2001.04.10	..	Q1005	10	2001.04.15	-5
R-001	Pipe & Fittings	2001.01.11	..	..	..	..	2001.03.10	..	Q1001	20	2001.05.25	6
R-002	Sitework	2000.12.15	..	..	..	..	2001.03.04	..	Q1003	40	2001.08.01	33

Like the budget, the schedule is also imported into the system. The schedule information includes the deliverables, the required on-site date, the lead-time, and the planned PO (Purchase Order), and RFQ (Request for Quote) dates. Note that all engineering activities steps are automatically outlined here – a feature that is rarely found and has to be created within scheduling packages, such as Primavera®'s products and Microsoft® Project™.

With these two imports accomplished, the Model can proceed with the project execution beginning with procurement. Prior to making the first commitment, the bill of materials is imported into the system, request for bids is issued and the bid evaluations are prepared. For this cooperative online process, engineers input the bills of material and do

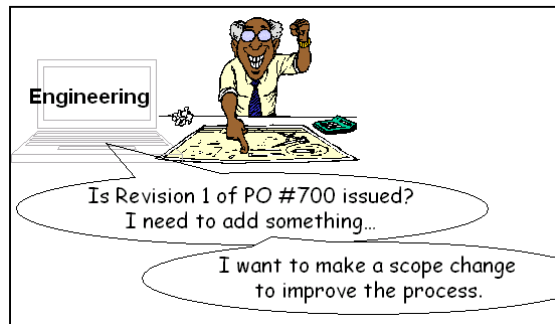
the technical bid evaluations; procurement personnel select bidders and prepare commercial evaluations. The client and management provide approvals to proceed. With all the information securely accessible via the Internet or local network, everyone involved, including the vendors, fabricators, and suppliers, can carry out their jobs efficiently and conveniently.

Issuing a Purchase Order

		Purchase Order			
		Project No. : AACE-MAR02 PO No. : AACE-MAR02 - Q1001 Last Rev. No. : 0 Full PO Last Rev. Date : 2001/03/11 Page 1 of 3 <small>Show Project and PO Number on all correspondences</small>			
Buyer : OnTrack Engineering Ltd. 1804 Bayshore Road S.W. Calgary, Alberta T2V 3M1 Canada		Consign To : To Be Assigned Attn : To Be Assigned			
Seller : A.N.E. Pipe Supply Limited 5608 - 17 Street Edmonton, Alberta Canada T5M 4R7		Invoice To : To Be Assigned Attn : To Be Assigned			
Attention: Darryl Wong Phone: 403-489-4500 Fax: 403-489-4501					
Initial Order Date 2001/03/11	Order Delivery Date 2001/06/10	Vendor Dwg. Due Date / /	Shipping Point : T.B.A.	Shipping Terms or Incoterm Status : Site	Invoice Terms of Payment : Net 30 Days
End Use : Gas Facility	Route VIA : Supplier	Project : TEST 2001R		Seller's Quotation Reference :	
		Location: Booster Station # 16			
<small>Please furnish goods and/or services described below subject to the terms and conditions of this purchase order and all attachments</small>					Currency: CDN \$
PO No. : AACE-MAR02 - Q1001		PO Description: Pipe & Fittings			
Item	Quantity	Description		Unit Price	Total
1	15.00	NPS 2 Elbow ea NPS 2 Elbow LR 90, BE, Gr. 350, CSA Z245.11, Cat II, M50F, to match 0.218" w/d. pipe	A FE2 5514 2B 5P 522 M 1 Current Delivery Date : 2001/06/25	5.45	81.75
				State / Prov. Tax :	8.17
2	8.00	NPS 2 Flange ea PN 150 RFWN Flange, GR. 350, CSA Z245.12, Cat. II, M50F, to match 0.218" pipe.	A FE2 5514 2B 5P 522 M 1 Initial Delivery Date : 2001/06/10	62.50	500.00
				State / Prov. Tax :	50.00
				Inspection :	Progressive
Requisition No. : R-001	Total Value this Purchase Order :		20,633.75 (All Taxes Extra)	Pls. Direct All Corresp. to :	
				Phone:	Fax:
<small>Seller please acknowledge acceptance of this order.</small>			<small>Inspection : Progressive</small>		
AUTHORIZED SELLER REPRESENTATIVE			AUTHORIZED CLIENT REPRESENTATIVE		
<small>PER Signature(s), Please Print Name</small>			<small>PER Signature(s), Please Print Name</small>		

With all the project data that was imported, and with the availability of the ever-expanding centralized database to the system, POs and revisions can be issued at a moment's notice. This enables engineers and clients to utilize the available procurement float and to fine tune and improve the design process.

In this example, only the initial purchase order is shown. The PO includes all technical and commercial terms and is flexible, allowing for separate cost codes, delivery dates, tag numbers, and revision references for each item. When a PO is issued, the system automatically updates the schedule and costs.



The next example shows that cost reports

are instantly updated. In the PO, the correct cost codes for pipe, valves and instruments were selected, illustrating the multiple coding capabilities for a single PO.

Project #: AACE_MAR02
Data Date: 2001.12.31
Print Date: 2001.03.11
Currency: CDN \$

Automatic Cost Update

AACE TEST Start Date: 2000.11.01 Previous End Date: 2001.02.28 Current End Date: 2001.12.31

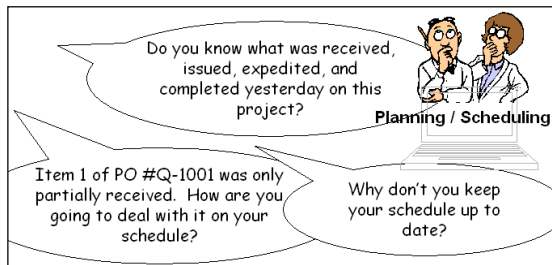
Item	COST CODES Description	BUDGET			Current Target (D= A+B+C)	COSTS			FORECAST		VARIANCE (N=K-D)
		Original Transfers (A)	Scope Changes (B)	Changes (C)		To Date Committed (G)	To Date Incurred (H)	To Date Approved (I)	To Complete (J)	Final Estimated (K)	
100	SITWORK	6,000	0	0	6,000	0	0	0	6,000	6,000	0
200	BUILDINGS	95,000	0	0	95,000	0	0	0	95,000	95,000	0
300	STRUCTURAL STEEL	8,000	0	0	8,000	0	0	0	8,000	8,000	0
522	PIPE & FITTINGS	15,000	0	0	15,000	6,582	0	0	8,418	15,000	0
523	VALVES	10,000	0	0	10,000	7,052	0	0	2,948	10,000	0
650	INSTRUMENTATION	17,000	0	0	17,000	7,000	0	0	10,000	17,000	0
TOTAL		151,000	0	0	151,000	20,634	0	0	130,366	151,000	0
		% 100.00			% 100.00	% 13.66	% 0.00	% 0.00	% 86.34	% 100.00	% 0.00

Like the cost report, the schedule, too, is continuously updated. This update is triggered by the computer's system date.

Automatic Engineering Schedule Update

AACE TEST Start Date: 2000.11.01 End Date: 2001.12.31

RFQ #	Description	RFQ Date Planned	RFQ Date Issued	Bid Closing	Sent For Approval	Approved	PO Date Planned	PO Date Issued	PO #	LeadTime (days)	Req'd on Site Date	Variance or Go To
R-003	Control Building	2001.01.16	..	..	..	..	2001.02.15	..	01002	30	2001.03.26	-46
R-004	Pipe & Fittings	2001.02.09	..	..	..	..	2001.03.10	..	01004	30	2001.04.19	-20
R-005	Pipe & Fittings	2001.03.11	..	..	..	..	2001.04.10	..	01005	10	2001.04.15	-5
R-002	Sitework	2000.12.15	..	..	..	..	2001.03.04	..	01003	40	2001.08.01	24
R-001	Pipe & Fittings	2001.01.11	2001.02.28	..	..	..	2001.03.10	2001.03.11	01001	20	2001.05.25	55



Updating a schedule has always been time-consuming. In this Model, though, the schedule is automatically updated as the project unfolds. Schedules for engineering work are better monitored via deliverables and via manpower resources rather than by parallel and constantly "priority-changing" activities.

For successful project delivery, not even a single PO item or part thereof should be ignored. In this Model the schedule can therefore expand itself to take into account exceptions and variations brought up by real life conditions. As an example, a PO can start with only one delivery date and end up with as many delivery dates as there are PO items. All these should be reflected in the schedule.

To continue the process, the expeditor and the inspector access specific POs in the database via the Internet from the fabrication shops and type or paste their reports directly into the system. This information enables the project team to take action as required.



The receiving clerk on the construction site can also access PO data via the Internet. The Model also indicates what has been previously received and what remains to be received.

This allows the clerk to promptly process the information that will in turn automatically update receiving and inventory reports. These updated reports are then available to all team members, including the construction personnel for planning erection activities, as well as the accounting personnel for processing invoices.

RECEIVING REPORT BY PURCHASE ORDER											Project #:	AACE_MAR02
Received By All Locations											Data Date:	2001.12.31
AACE TEST											Print Date:	2001.05.16
											Start Date:	2000.11.01
											End Date:	2001.12.31
PO #	Item	Description	Tag #	Material ID	MRR #	Date	Qty Ordered	Qty Rec'd	Total Rec'd	Location Stored	Location Received At	Condition
Q1001	1	NPS 2 Elbow			MRR-001	2001.05.16	15.00	10.00	10.00	Bin 16	Warehouse	Accepted
	2	NPS 2 Flange			MRR-001	2001.05.16	8.00	8.00	8.00	Bin 16	Warehouse	Accepted
	3	NPS 2 Pipe			MRR-001	2001.05.16	500.00	500.00	500.00	Bin 16	Warehouse	Accepted
	5	NPS 2 Globe Valve	V201		MRR-001	2001.05.16	2.00	2.00	2.00	Bin 16	Warehouse	Accepted
	6	NPS 3 Globe Valve	V301		MRR-001	2001.05.16	3.00	3.00	3.00	Bin 16	Warehouse	Accepted

INVENTORY STATUS SUMMARY										Project #:	AACE_MAR02
By Purchase Order										Data Date:	2001.12.31
AACE TEST										Print Date:	2001.05.16
										Start Date:	2000.11.01
										End Date:	2001.12.31
PO #	Item	Description	Tag #	Unit	Ordered	Rec'd	Outstanding	Transferred	Balance		
Q1001	1	NPS 2 Elbow		ea	15.00	10.00	5.00	8.00	2.00		
Q1001	2	NPS 2 Flange		ea	8.00	8.00	0.00	0.00	8.00		
Q1001	3	NPS 2 Pipe		m	500.00	500.00	0.00	0.00	500.00		
Q1001	5	NPS 2 Globe Valve	V201	ea	2.00	2.00	0.00	0.00	2.00		
Q1001	6	NPS 3 Globe Valve	V301	ea	3.00	3.00	0.00	0.00	3.00		

As material is received, the expediting report is automatically updated, indicating what is received the received date, what is critical, and how much float the non-critical items have. In this example, item 4 of PO Q1001 is 21 days behind schedule and item 1 of PO Q1004 is 27 days behind.

Automatic Updated Expediting Reports

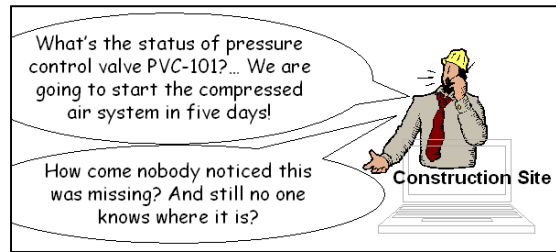
Area	PO #	RFQ #	Vendor/Supplier	Description	Tag Item	Quantity Ordered	Quantity To Expedite	Promised Current *	Req'd On Site	Variance of Received
2B	Q1001	R-001	A.N.E. Pipe Supply	Pipe & Fittings						
Item #	1	Rev # 0		NPS 2 Elbow		15.00	5.00	2001.05.15 *	2001.05.25	10
Item #	2	Rev # 0		NPS 2 Flange		8.00	0.00	2001.05.15 *	2001.05.25	2001.05.16
Item #	3	Rev # 0		NPS 2 Pipe		500.00	0.00	2001.05.15 *	2001.05.25	2001.05.16
Item #	4	Rev # 0		Control Valve	PVC-101	1.00	1.00	2001.06.15 *	2001.05.25	-21
Item #	5	Rev # 0		NPS 2 Globe Valve	V201	2.00	0.00	2001.05.15 *	2001.05.25	2001.05.16
Item #	6	Rev # 0		NPS 3 Globe Valve	V301	3.00	0.00	2001.05.15 *	2001.05.25	2001.05.16
Item #	7	Rev # 0		Shipping		1.00	1.00	2001.05.15 *	2001.05.25	10
Item #	8	Rev # 0		Mill Test Reports		3.00	3.00	2001.05.15 *	2001.05.25	10
Item #	9	Rev # 0		O & M Manuals		7.00	7.00	2001.05.15 *	2001.05.25	10
2B	Q1004	R-004	DC Valve Experts Ltd.	Pipe & Fittings						
Item #	1	Rev # 0		NPS 3 Globe Valve		2.00	2.00	2001.04.15	2001.04.19	-27

One of the most useful reports for management is the Critical Items report. This report allows the project team to “manage by exception” without printing hundreds of pages. The example shows the two critical items mentioned earlier.

CRITICAL ITEMS											
Critical Deliveries (Negative Variances)											
PO #	RFQ #	Tag #	Vendor	Description		Quantity Ordered	Quantity To Expedite	Req'd On Site Date	Promised Current *	Late By (days)	Variance of Received
Q1001	R-001		A.N.E. Pipe Supply								
			PVC-101	Item # 4 Rev # 0 Control Valve		1.00	1.00	2001.05.25	2001.06.15 *	N/A	-21
Q1004	R-004		DC Valve Experts Ltd.								
				Item # 1 Rev # 0 NPS 3 Globe Valve		2.00	2.00	2001.04.19	2001.04.15	-27	-27

Critical items reports, shown here for deliveries, help users avoid major unpleasant surprises, especially during any startup.

When each and every listed item, or fraction thereof, is known, schedules can be controlled and projects can be brought to successful completion.



With a smart and integrated system, payment processing only requires the entry of invoice and cheque numbers with the respective dates and all of the rest is automatic – and is based on what was received and PO prices. Here is an example of what is printed on a cheque and its stub:

The Payment Process

***** 13,103.06 ***CDN \$ 2001.06.30 \$ 13,103.05

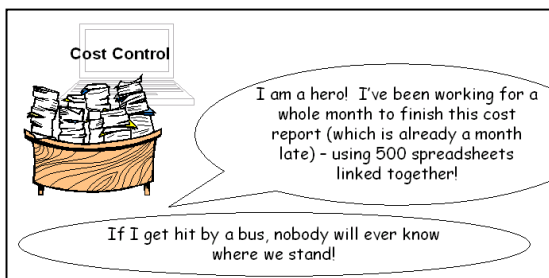
A.N.E. Pipe Supply Limited
Edmonton,

PO Number	Inv Number	Amount	Prov/St Tax	Federal Tax	Total
Q1001	ANE0001	12,245.85	0.00	857.21	13,103.06
Totals :		12,245.85	0.00	857.21	13,103.06

And based on a post-dated and issued cheque, an automatic request for funds is issued to the client in their own coding system. This enables the client to readily incorporate this information into their own accounting system.

Automatic Request for Funds

AACE TEST		Approved (1)		Prov/St (1)		Federal (1)		Cheque (1)		Start Date: 2000.11.01	End Date: 2001.12.31
Client 1	Client 2	Amount	Amount	Amount	Amount	Amount	Amount	Amount	Amount		
Cheque # CH0001	Cheque Date 2001.06.30	Vendor A.N.E. Pipe Supply Limited		Invoice # ANE0001	Date 2001.05.2	Purchase Order # Q1001					
TOTAL THIS CLAIM	Approved This Funding Claim	13,606.50	0.00	352.46	14,558.96						
	Amount Paid To Date	12,245.85	0.00	857.20	13,103.06						
	Amount Paid This Funding Claim	12,245.85	0.00	857.21	13,103.06	Holdback	1,455.90				



Thus far, the cost controller's work is done by others using the Model. Today, spreadsheets still reign for cost reporting, but these lose their luster when the volume of information renders continued use of spreadsheets impractical, out of date, and even impossible.

In order to complete the illustration, the cost

controller issues budget trends and changes, as well as a budget transfer, to reflect a change in the execution of this project.

Trend, Changes & Transfer Reports

CHANGES BUDGET REPORT											Project #:	AACE_MAR02
											Date Date:	2001.12.31
											Print Date:	2001.03.12
											Currency:	CDN \$
											End Date:	2001.12.31
AACE TEST											Start Date:	2000.11.01
Project #	Area	Disc	Item	Type	Ser#	Description	Amount	Hours	Date	Reason	Change #	Reference
AACE_MAR02	2B	5P	523	M	1	VALVES	10,000.00	0.00	2001.03.12	Issued Trend # 0	1	
TOTAL THIS CODE							10,000.00	0.00				
TOTAL THIS PROJECT							10,000.00	0.00				

BUDGET TRANSFER REPORT											Start Date:	2000.11.01	End Date:	2001.12.31
Project #	Area	Disc	Item	Type	Ser#	Description	Amount	Hours	Date	Reason	Transfer #	Reference		
AACE_MAR02B	5P	523	M	1	VALVES	-1000.00	0.0	2001.03.12	Transferred as requested			1		
TOTAL THIS CODE							-1000.00	0.0						
AACE_MAR02B	6I	650	M	1	INSTRUMENTATION	1000.00	0.0	2001.03.12	Transferred as requested			1		
TOTAL THIS CODE							1000.00	0.0						
TOTAL THIS PROJECT							0.00	0.0						

Effects of Changes & Transfer

100	SITWORK	6,000	0	0	6,000
200	BUILDINGS	95,000	0	0	95,000
300	STRUCTURAL STEEL	8,000	0	0	8,000
522	PIPE & FITTINGS	15,000	0	0	15,000
523	VALVES	10,000	-1,000	10,000	19,000
650	INSTRUMENTATION	17,000	1,000	0	18,000
TOTAL		151,000	0	10,000	161,000

The resulting effect is again automatically generated, showing that \$1,000 was transferred from valves to instruments and a change of \$10,000 has been approved.

After viewing the screen showing all the current and remaining to be committed data, payments, trends, and changes, the only other work the cost engineer needs to perform is to decide on the cost at completion for each cost code.

The Automatic Cost Report Update

AACE TEST											Start Date:	2000.11.01	Previous End Date:	2001.02.28	Current End Date:	2001.12.31
COST CODES			BUDGET				COSTS			FORECAST		VARIANCE				
Client 1	Area	Description	Original	Scope	Current	To Date	To Date	To Date	To	Final						
			Transfers	Changes	Target	Committed	Incurred	Approved	Complete	Estimated						
			(A)	(B)	(C)	(D=A+B+C)	(G)	(H)	(I)	(J)	(K)	(N=K-D)				
A FE1	1B	2 - 28 BATTERY	101,000	0	0	101,000	0	0	0	101,000	101,000	0				
A FE1		FACILITIES	101,000	0	0	101,000	0	0	0	101,000	101,000	0				
A FE2	2B	2 - 28 EXPANSION	50,000	0	10,000	60,000	36,634	13,607	13,607	27,366	64,000	4,000				
A FE2		PIPELINES	50,000	0	10,000	60,000	36,634	13,607	13,607	27,366	64,000	4,000				
TOTAL			151,000	0	10,000	161,000	36,634	13,607	13,607	128,366	165,000	4,000				
			% 100.00			% 106.62	% 24.26	% 9.01	% 9.01	% 85.01	% 109.27	% 2.65				
						Less Holdback			1,361							
						Net Paid			12,246							

CONCLUSION

These few examples, selected from hundreds of reports and view screens, illustrate how by using this type of Model, projects can be delivered successfully, and companies are guaranteed to be more competitive and more profitable.