



High performance. Delivered.

**Praxisvortrag
Projektüberwachung und -steuerung**

Dresden, 17.06.2010
Robert Mühlbach
Holger Waide

Wer ist eigentlich Accenture?



■ Fakten

- Gegründet im Jahr 1989
- Rund 186.000 Mitarbeiter weltweit
- über 110 Büros in 49 Ländern
- 21,6 Milliarden US\$ Umsatz per 31.08.2009

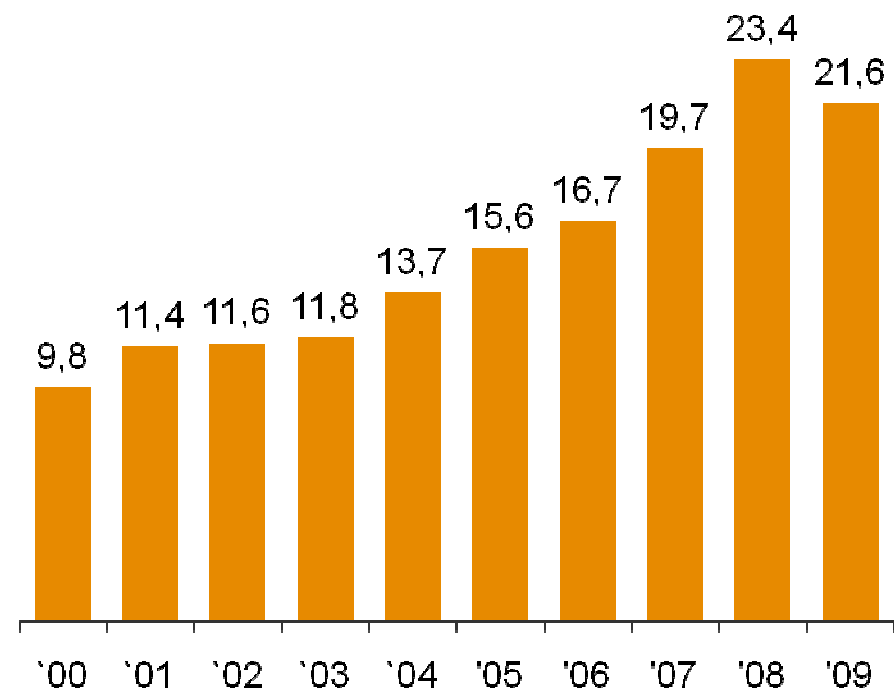
■ Kunden

- Top-Unternehmen: 94 des „Fortune-Global-100-Index“

■ Kooperationen

- Mehr als 100 Allianzen mit Weltmarktführern und Technologie-unternehmen (z. B. Microsoft, Siebel Systems, SAP, Hewlett Packard)

Umsatz in Mrd. US-Dollar



Accenture ist ein weltweit agierender Managementberatungs-, Technologie- und Outsourcing-Dienstleister



Comm. & High Tech



Financial Services



Post & Public Services



Products



Resources



Managementberatung

Systemintegration & Technologie

Outsourcing



- **„Heimat“ für Informatiker**
 - **weltweit 42.000 Mitarbeiter / 840 in ASG**
 - **Einsatz direkt beim Kunden oder in Competence-Centern**

- **Pre-Entry / Jump Start Programm**
 - **Zweimonatige SAP Schulung in Kronberg**
 - **Nach Bestehen unbefristeter Arbeitsvertrag**

- **Interessante Perspektiven**
 - **Zusammenarbeit / Koordinierung mit Offshore-Kollegen**
 - **Möglichkeit einer Fachkarriere**

Agenda



Projektüberwachung und -steuerung

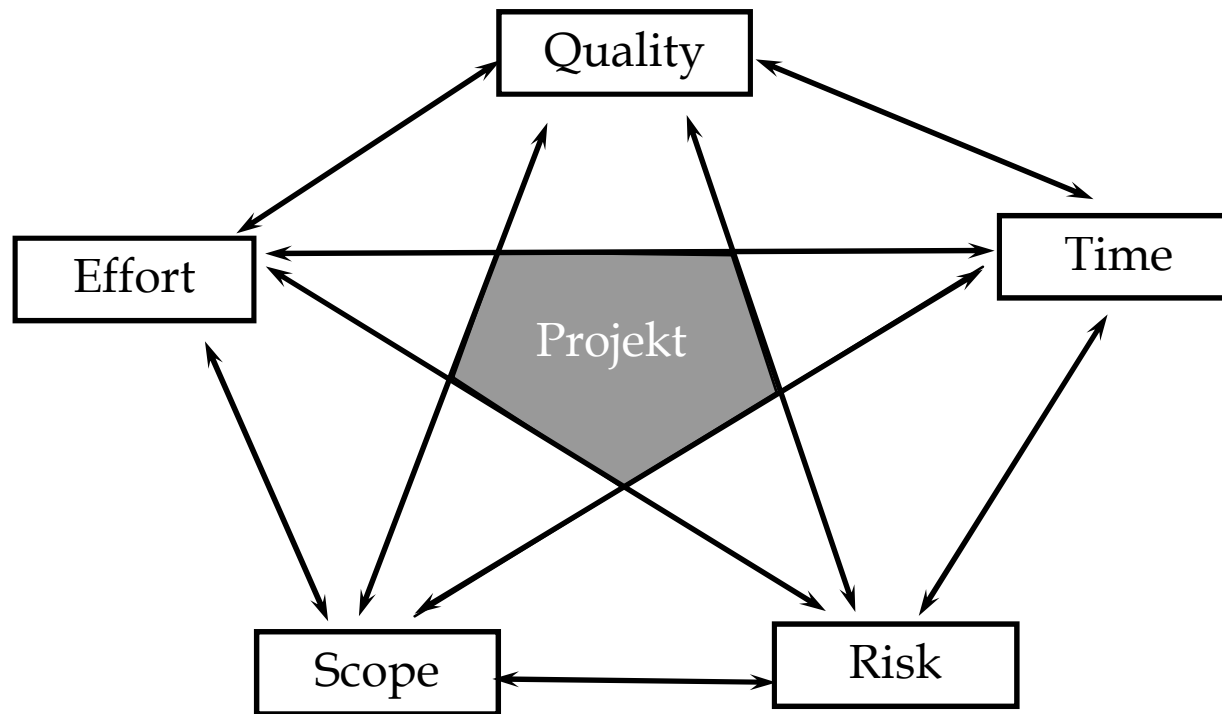
- Warum notwendig?
- Wie und womit?
- Was ist zu beachten?



Projektüberwachung und -steuerung

- **Warum notwendig?**
- Wie und womit?
- Was ist zu beachten?

Projektmanagement SQERT-Modell



SQERT - Model

Dimensionen des Projektmanagements (1)

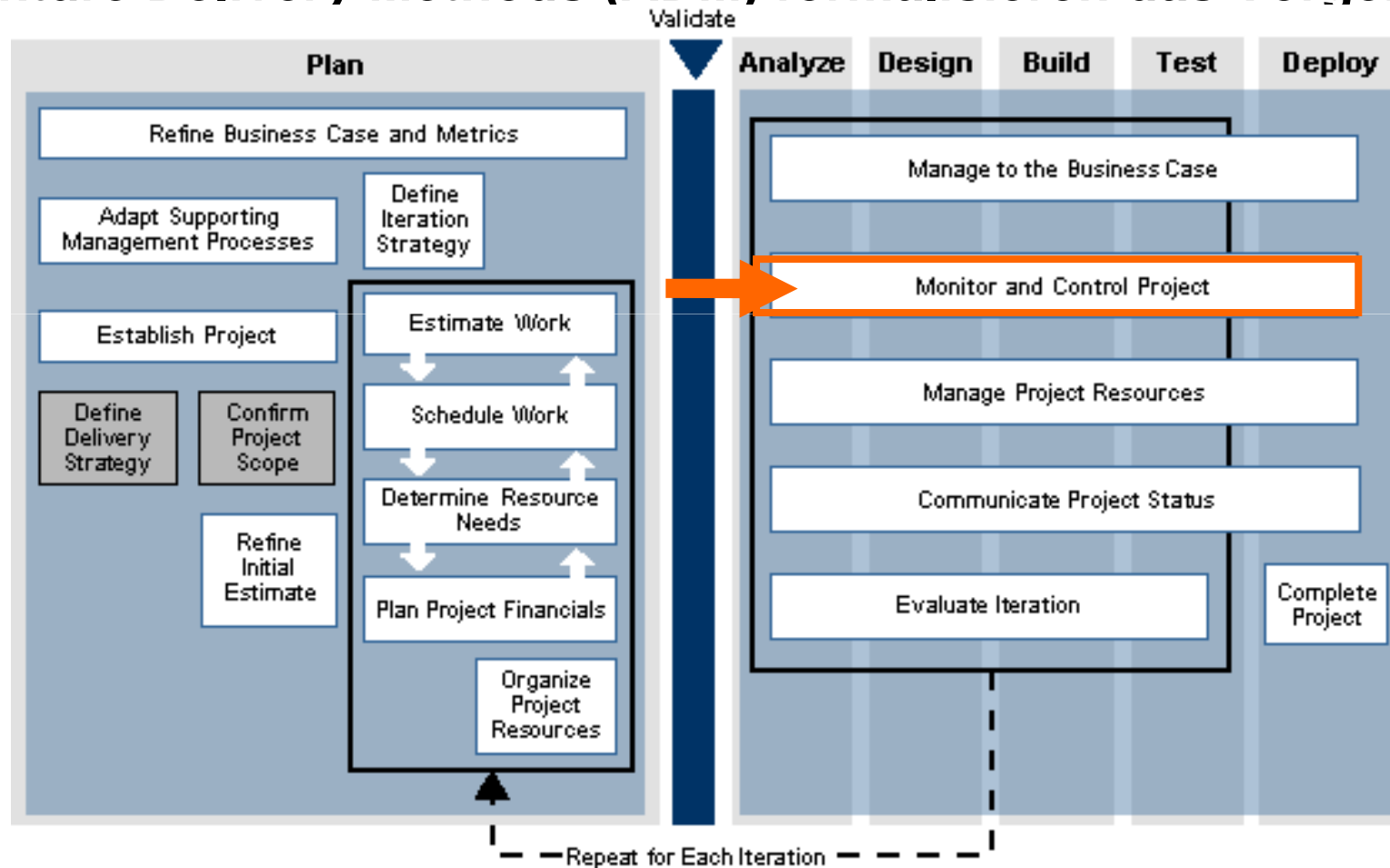


- **Kalkulation (Estimating)**
- **Planung (Work and resource planning)**
- **Überwachung & Steuerung (Monitoring & Controlling)**

Dimensionen des Projektmanagements (2) - ADM



Accenture Delivery Methods (ADM) formalisieren das Vorgehen



Projektkalkulation



In der Projektkalkulation wird der Aufwand für die Fertigstellung einer Anforderung geschätzt.

Ohne eine genaue Aufwandsschätzung kann ein Projekt:

- **die Zeit- und Budgetplanung überschreiten**
- **die Gewinnmarge drastisch verkleinern**
- **Team-Moral senken**



Projektkalkulation Accenture Delivery Methodology Estimator (Demo)



Activity	Task	Estimating Factors	# of Units	Factor Hr/Unit	Factor Subtot	Task Subtot	Adj	Adj Hlp	Estimate Days	Key Deliverables												
3	Help																					
4	Feedback and support																					
5	Instructions																					
6	Help for this worksheet																					
7	Factor Help																					
8	Demo																					
<table border="1" style="float: right; margin-top: 10px;"> <tr> <td colspan="2">Total</td> </tr> <tr> <td>Overall Total (days)</td> <td>11.063</td> </tr> <tr> <td>Project Subtotal (days)</td> <td>9.219</td> </tr> <tr> <td>Project Contingency (days)</td> <td>1.844</td> </tr> <tr> <td>Appended Proj Subtotal (days)</td> <td>0</td> </tr> <tr> <td>Appended Proj Contingency</td> <td>0</td> </tr> </table>											Total		Overall Total (days)	11.063	Project Subtotal (days)	9.219	Project Contingency (days)	1.844	Appended Proj Subtotal (days)	0	Appended Proj Contingency	0
Total																						
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<table border="1" style="float: right; margin-top: 10px;"> <tr> <td>Mgmt</td> <td>Medium</td> </tr> <tr> <td>Tech Arc.</td> <td>Medium</td> </tr> <tr> <td>Intro</td> <td>Medium</td> </tr> </table>											Mgmt	Medium	Tech Arc.	Medium	Intro	Medium						
Mgmt	Medium																					
Tech Arc.	Medium																					
Intro	Medium																					
15	X	Project Management							1.039,8													
72	X	Plan							465,0													
132	X	Analyze							0,0													
133		2100 Analyze Application							0,0													
216		2300 Analyze Technical Architecture							0,0													
273		2500 Analyze Training and Performance Support							0,0													
303	X	Design							309,6													
304		3100 Design Application							0,0													
377	X	3300 Design Technical Architecture							125,1													
411	X	3500 Design Training and Performance Support							184,5													
456	X	Build							4.745,2													
572	X	Test							2.198,8													
573	X	5100 Test Application							1.740,0													
574	X	5128 Prepare and Execute Assembly Test				1.757		117%	262,1	TE483 Common Test												
595	X	5131 Confirm Assembly-tested Application				21		155%	4,1	PL201 Requirements												
597	X	5139 Transition Assembly-tested Application				31		125%	4,9	PL101 Requirements												
599	X	5148 Prepare and Execute Product Test				7.620		120%	1.145,9	TE483 Common Test												
607	X	5158 Prepare and Execute Performance Test				0		100%	0,0	TE483 Common Test												
612	X	5168 Perform Mock Conversion				2.022		50%	125,4	AP370 Data Conversion												
625	X	5171 Confirm Product-tested Application				76		126%	12,0	AP568 Mock Conversion												
627	X	5179 Transition Product-Tested Application				76		126%	12,0	AP568 Mock Conversion												
629	X	5188 Prepare and Execute User Acceptance Test				145		118%	168,9	TE580 Test Plan												
639	X	5191 Confirm User-accepted Application				11		130%	1,9	PL101 Requirements												
641	X	5199 Transition User-Accepted Application				23		100%	2,9	AP568 Mock Conversion												
643	X	5300 Test Technical Architecture							228,9													
662	X	5500 Test Training and Performance Support							229,9													
638	X	Service Introduction							55,0													
720	X	Deploy							0,0													
826	X	Development Environment Support							405,7													
827	X	3100 Development Environment Support							405,7													
This activity is NOT currently in the methodol																						
	X	2378 Support Technology and Work Environment				3.509		93%	405,7	TA243 Application Development Standards TA433 Technology Policies and Procedures												

Projektplanung



Die Projektplanung ist unverzichtbarer Bestandteil um sicherzustellen, dass die geeigneten Teammitglieder die richtigen Aufgaben zur richtigen Zeit erledigen

- **Projektplan**
- **Meilensteine**
- **Ressourcenplanung**



Projektplanung mit MS Project (Demo)



ID	Task Name	Methodology Link	Key Deliverables	Methodology Outline ID	Effort Estimate (in hours)	Work	Duration
19	4025 Evaluate Iteration	https://methodology	Iteration Strategy	Proj Mgmt.4025 Eval Iteration	171	171 hrs	#####
20	6091 Complete Project	https://methodology	Business Case, M	Proj Mgmt.6091 Complete Proj	205	205 hrs	20.5 days
21	⊕ Analyze			ustom Development.Analy	3615	3,615 hrs	#####
46	⊕ Design			ustom Development.Design	7902	7,902 hrs	#####
67	⊖ Build			ustom Development.Build	18744	18,744 hrs	#####
68	⊖ 4100 Build Application	https://methodology		ment.Build.4100 Build App	17919	17,919 hrs	#####
69	4143 Create Production G	https://methodology	Visual Design	App.4143 Create Prodn Graph	34	34 hrs	1.7 days
70	4145 Develop Page Templ	https://methodology	Page Template	Build App.4145 Dev Pg Templ	0	0 hrs	0 days
71	4155 Customize Applicati	https://methodology	none	App.4155 Cust App Compnts	357	357 hrs	35.7 days
72	4153 Specify Application	https://methodology	Class Design, Con	App.4153 Spec App Compnts	3651	3,651 hrs	#####
73	4163 Perform Physical Da	https://methodology	Physical Data Mod	App.4163 Perf Phy Db Design	121	121 hrs	7.56 days
74	4183 Plan Component Tes	https://methodology	Test Approach, Tr	d App.4183 Plan Compnt Test	895	895 hrs	#####
75	4188 Build and Test Appli	https://methodology	Requirements Trai	88 Build & Test App Compnts	12395	12,395 hrs	#####
76	T4199 Transition Applicati	https://methodology	Class Design, Use	d App.T4199 Trans App Build	466	466 hrs	#####
77	⊖ 4500 Build Training and Pe	https://methodology		00 Build Train & Perf Supp	825	825 hrs	#####
78	4535 Develop Training Ma	https://methodology	Training Evaluation	Perf Supp.4535 Dev Train Mtrl	666	666 hrs	#####
79	4555 Develop Communica	https://methodology	Communication Me	erf Supp.4555 Dev Comm Mtrl	120	120 hrs	10.5 days
80	T4599 Transition Change	https://methodology	Test Plan, Training	.T4599 Trans Chg Enblmt Mtrl	39	39 hrs	2.44 days
81	⊖ Test			ustom Development.Test	11564	11,564 hrs	#####
82	⊖ 5100 Test Application	https://methodology		oment.Test.5100 Test App	11191	11,191 hrs	#####
83	5128 Prepare and Executi	https://methodology	Common Test Data	28 Prep & Exec Assmbly Test	2571	2,571 hrs	#####
84	5138 Prepare and Executi	https://methodology	Common Test Data	p.5138 Prep & Exec Prod Test	6070	6,070 hrs	#####
85	5158 Prepare and Executi	https://methodology	Common Test Data	p.5158 Prep & Exec Perf Test	338	338 hrs	#####
86	T5159 Transition Product-	https://methodology	Use Case Model, F	'5159 Trans Prod-Tested App	20	20 hrs	1.5 days
87	5178 Prepare and Executi	https://methodology	Test Plan, Test Cl	rep & Exec User Accept Test	2150	2,150 hrs	#####

Taskstruktur in MS Project – heruntergeladen aus dem ADM Estimator

Projektüberwachung und -steuerung



... ist das Überwachen des Projektfortschritts anhand von Soll/Ist-Vergleichen.

Bei auftretenden Problemen müssen geeignete Korrekturmaßnahmen eingeleitet werden

- **Planung ist iterativ**
- **Planung muss genauso sorgfältig angepasst werden wie sie erstellt wurde**





Projektüberwachung und -steuerung

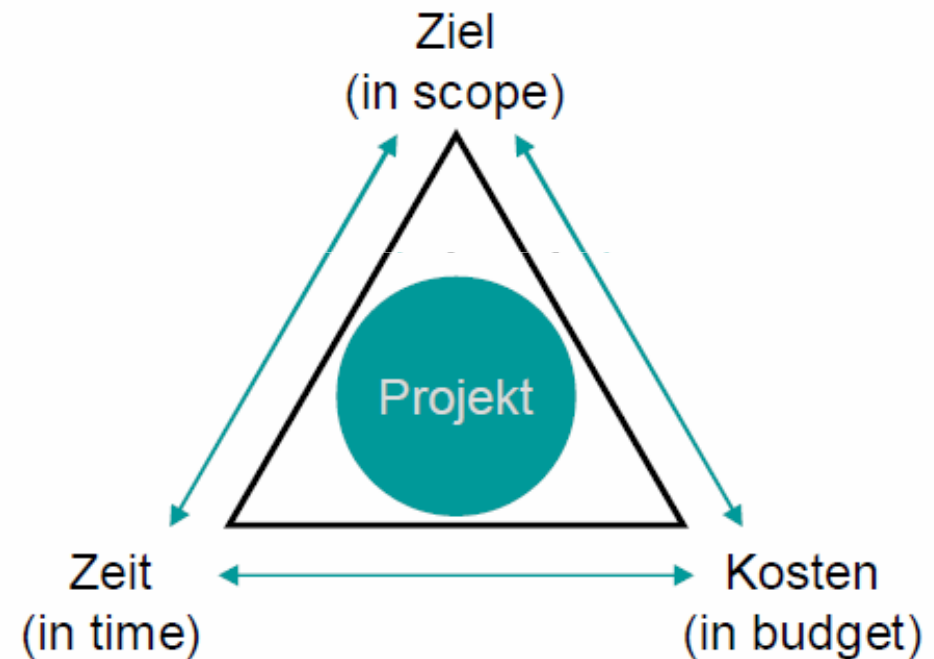
- Warum notwendig?
- **Wie und womit?**
- Was ist zu beachten?

Dimensionen der Projektüberwachung und -steuerung

Projektdreieck



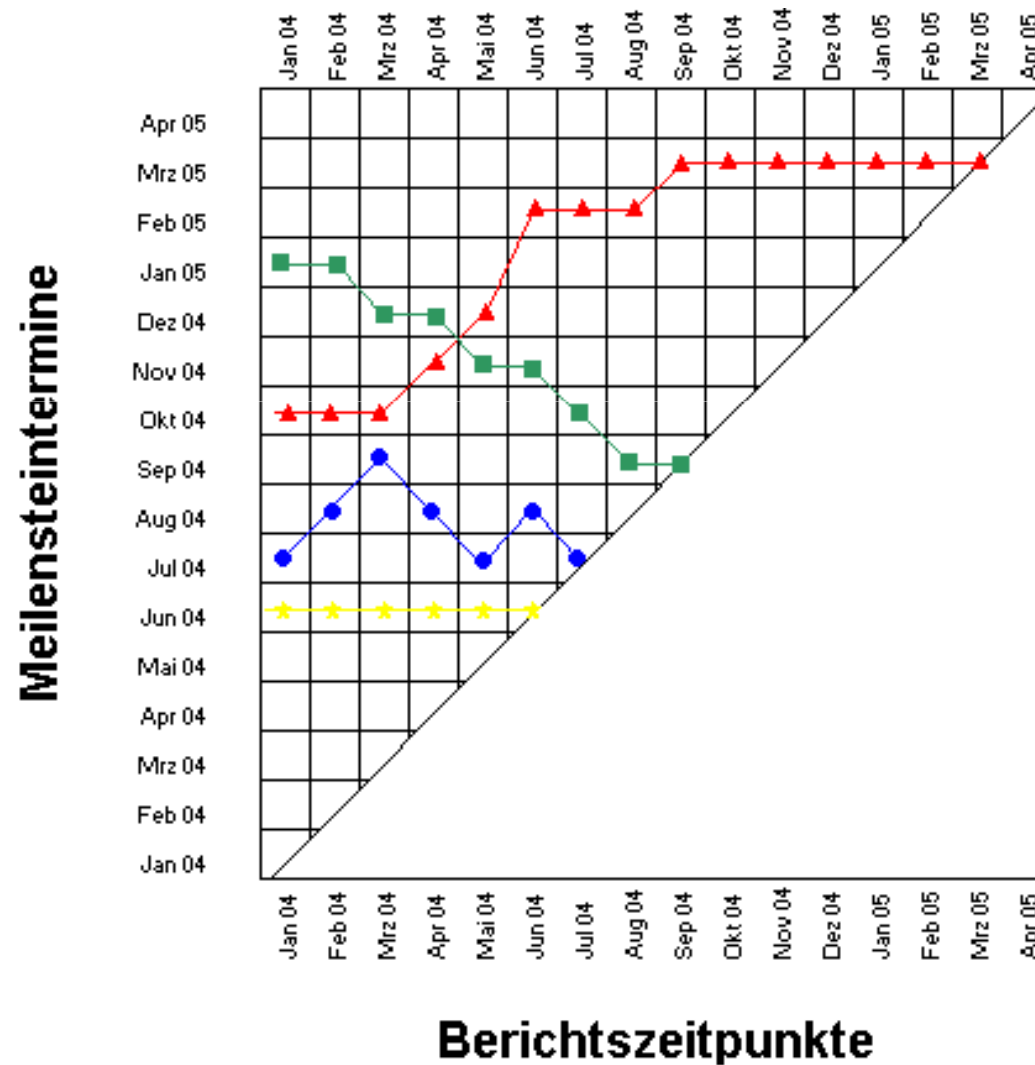
- **Zielüberwachung**
 - Scopemanagement
 - z.B. Ergebnisdefinition je Phase / Abnahmen
- **Terminkontrolle**
 - Netzplan
 - z.B. Meilensteintrendanalyse
- **Kostenkontrolle**
 - Mittelabfluss
 - Mittelfestlegung
 - z.B. Earned Value Analyse



Anpassungen im Projektdreieck (bzw. SQERT) können nötig sein!

Terminkontrolle

Beispiel: Meilenstein-Trendanalyse



Kostenkontrolle

Beispiel: Earned Value Analyse - Basisgrößen



- **Industriestandard zur Messung des Projektfortschritts**
 - **Sagt Fertigstellungsdatum und finale Kosten voraus**
 - **Zeigt Termin- und Budgetabweichungen an**



- **Arbeitet mit 3 Basisgrößen**
 - **Geplante Kosten (planned costs, BCWS)**
 - **Istkosten (actual cost, ACWP)**
 - **Leistungswert (earned value, BCWP)**

Kostenkontrolle

Beispiel: Earned Value Analyse - Überblicksgrößen



■ Planabweichung (schedule variance, sv)

= Leistungswert – geplante Kosten

$sv > 0$... mehr erreicht als geplant

$sv < 0$... weniger erreicht als geplant

■ Kostenabweichung (cost variance, cv)

= Leistungswert – Istkosten

$cv > 0$... weniger verbraucht als geplant

$cv < 0$... mehr verbraucht als geplant

Kostenkontrolle

Beispiel: Earned Value Analyse

Interpretation der Überblicksgrößen



Plan (-)
Kosten (-)

Plan (+)
Kosten (-)

Plan ()
Kosten ()

Plan ()
Kosten (+)

Kostenkontrolle

Beispiel: Earned Value Analyse - Überblicksgrößen



■ relative Zeiteffizienz (schedule performance index)
SPI = Leistungswert / geplante Kosten

■ relative Kosteneffizienz (cost performance index)
CPI = Leistungswert / Istkosten

Kostenkontrolle

Beispiel: Earned Value Analyse

Vorhersagegrößen



Vorhersage aufgrund der Effizienzzahlen

- geschätzter Restaufwand (estimated to complete, ETC)

$$\text{ETC} = (\text{geplante Gesamtkosten} - \text{Leistungswert}) / \text{Kosteneffizienz}$$

- geschätzte Gesamtkosten (estimate at completion, EAC)

$$\text{EAC} = \text{Istkosten} + \text{geschätzter Restaufwand}$$

... und weitere...

Earned Value Analyse Ein einfaches Beispiel ...



120m Wand
streiche ich in 3
Tagen



10 Euro / h

Earned Value Analyse Ein einfaches Beispiel...



	1.6.	2.6.	3.6.
Plan Wand gestrichen in m	40	80	120
Geplante Kosten (BCWS)	80,00	160,00	240,00
Istkosten (ACWP)	80,00	160,00	?
Wand gestrichen in m	30	60	?
Leistungswert (BCWP)	60,00	120,00	?
Planabweichung (PV)	-20,00	-40,00	?
Kostenabweichung (CV)	-20,00	-40,00	?
relative Zeiteffizienz (SPI)	0,75	0,75	
relative Kosteneffizienz (CPI)	0,75	0,75	
geschätzter Restaufwand (ETC)	240,00	160,00	?
geschätzter Gesamtaufwand (EAC)	320,00	320,00	?

Earned Value Analyse in der Praxis Measurement Workbook (Demo)



Cost & Schedule Macro Results

Microsoft Excel - Book3

File Edit View Insert Format Tools Data Window Help

Security...

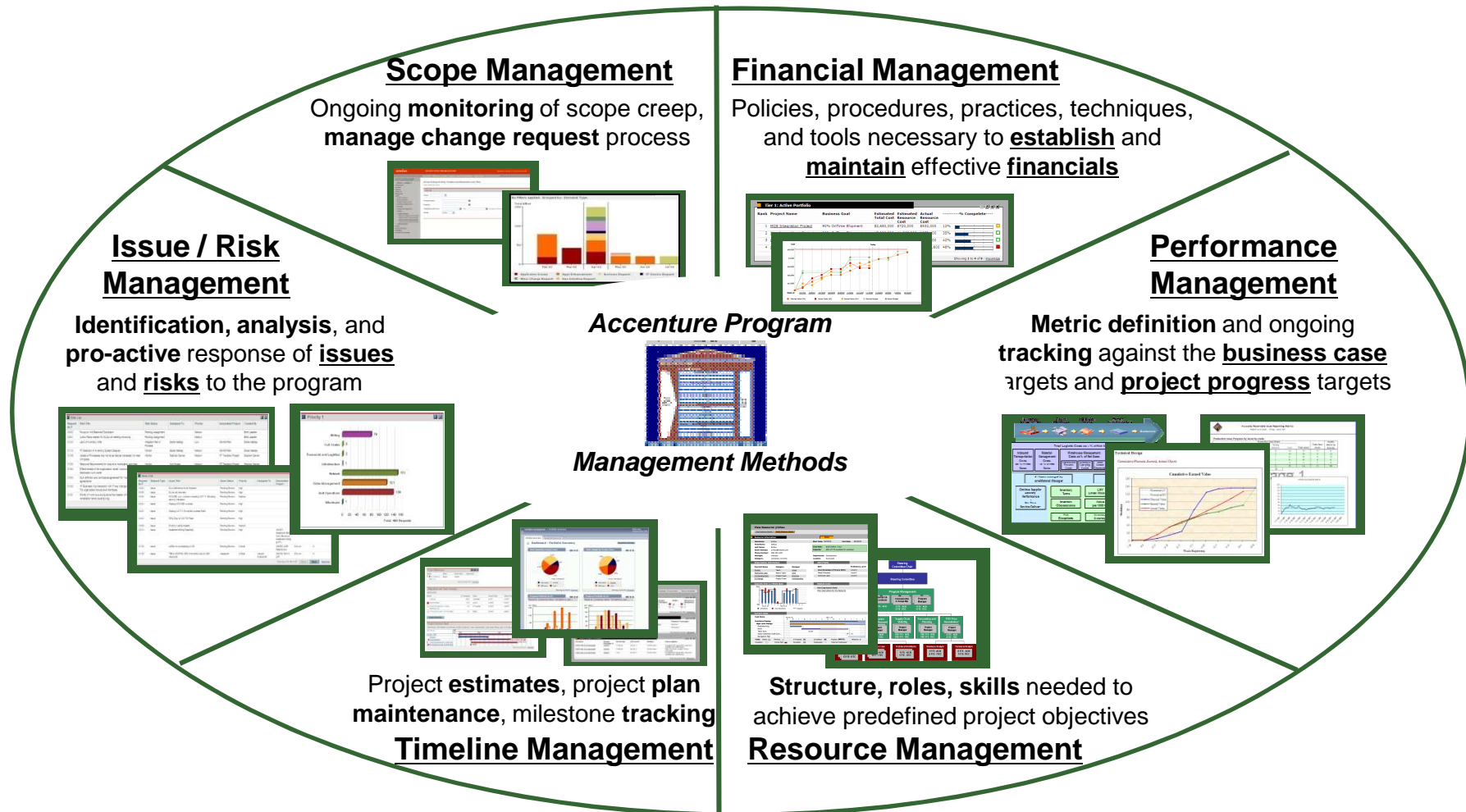
A1 Cost and Schedule Monthly and Weekly Summary Report for US

Month	BCAC	BCWP	BCWS	ACWP	Cost Variance
12/31/02	2,408.0	0.0	0.0	0.0	0.0
01/31/03	2,408.0	228.0	0.0	284.0	-56.0
02/28/03	2,408.0	1,360.0	2,384.0	1,554.3	-194.3
Week	BCAC	BCWP	BCWS	ACWP	Cost Variance
12/09/02	2,408.0	0.0	0.0	0.0	0.0
12/16/02	2,408.0	0.0	0.0	0.0	0.0
12/23/02	2,408.0	0.0	0.0	0.0	0.0
12/30/02	2,408.0	0.0	0.0	0.0	0.0
01/06/03	2,408.0	0.0	0.0	0.0	0.0
01/13/03	2,408.0	0.0	0.0	0.0	0.0
01/20/03	2,408.0	144.0	0.0	149.0	-5.0
01/27/03	2,408.0	210.0	0.0	213.0	-3.0
02/03/03	2,408.0	256.0	0.0	399.0	-143.0
02/10/03	2,408.0	656.0	0.0	862.5	-206.5
02/17/03	2,408.0	864.0	2,384.0	1,007.2	-143.2
02/24/03	2,408.0	1,264.0	2,384.0	1,395.7	-131.7
03/03/03	2,408.0	1,360.0	2,384.0	1,554.3	-194.3

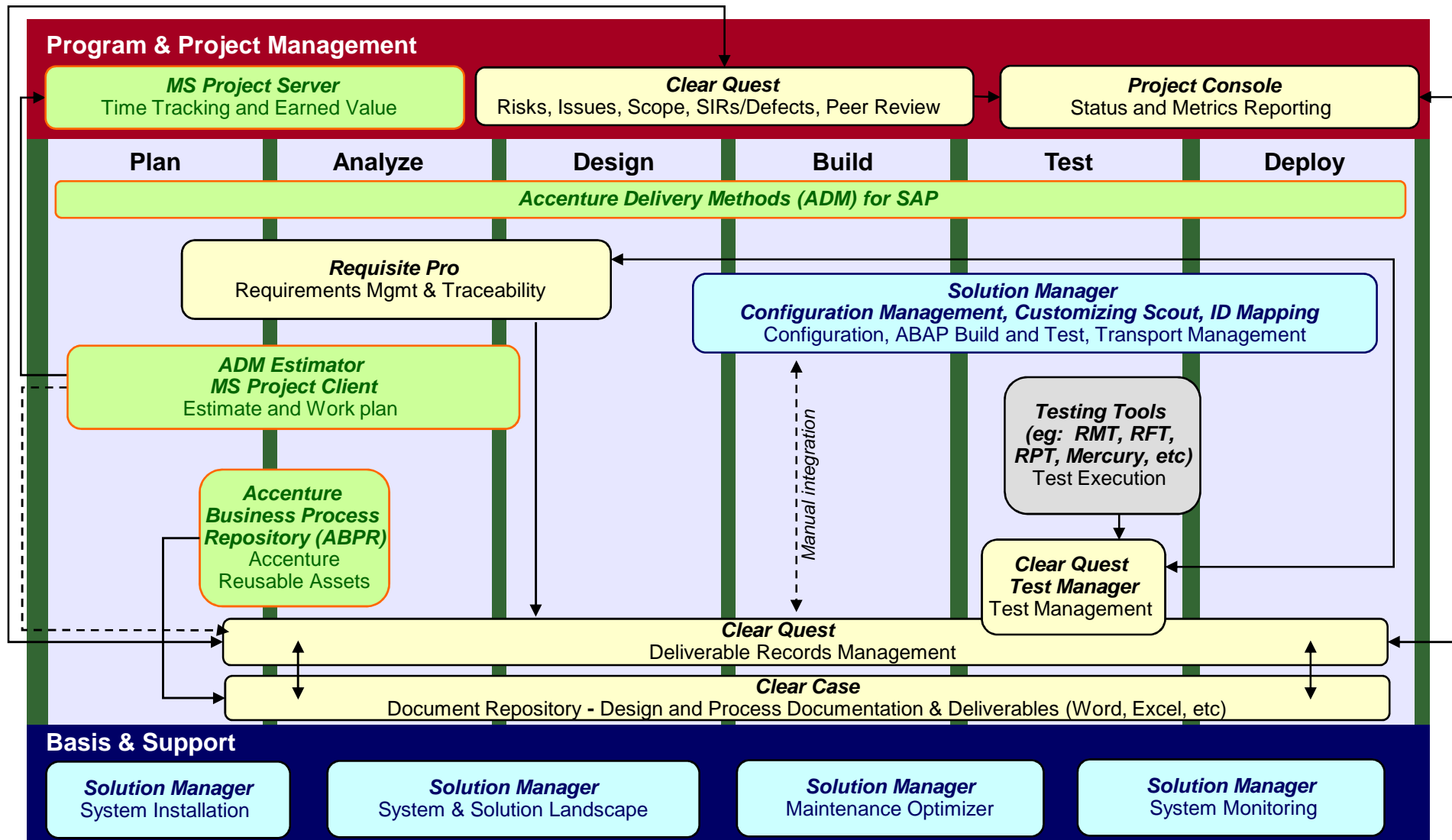
Measurement Workbook

METRIC DATA INPUT													
Navigation Page	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Project Comments
The values should be cumulative totals unless otherwise noted.													
Project Stage													
Effort and Cost / Schedule Management	Cost Performance Index	Schedule Performance Index	Cost and Schedule										
Budget at Completion (BAC)													
Earned Value (EV)													
Planned Value (PV)													
Actual Cost (AC)													
Project Estimate To Complete (ETC)													
Project Estimate To Complete at Risk (ETCR)													
Risks	Realized Risk Ratio	Risk Exposure Ratio											
Total # of Risks													
Total # of Risks Realized													
Total Risk Impact for Risks Realized													
Total Risk Exposure													
Change Requests	CR Impact	Risk Volatility											
Number of Approved CRs (cumulative)													
Monthly Approved CRs													
Impact in Hours (cumulative)													
Monthly Impact in Hours													

Welche weiteren Tools kommen bei Accenture in der Projektüberwachung und –steuerung zum Einsatz?



Accenture Delivery Tools – Beispielhaft für SAP-Projekte





Projektüberwachung und -steuerung

- Warum notwendig?
- Wie und womit?
- **Was ist zu beachten?**



10 Goldene Regeln aus der Praxis

#1



Completion is final.

#2



Climb the wall.

#3



Escalate problems fast.

#4



Give managers a chance to manage.

#5



Problems need owners.

#6



Ask good questions.

#7



Issues and risks are different.

#8



Always have a work plan.

Know your status.

#9



Stay clear on scope.

#10



Write it down.

Fragen, Antworten und Diskussion



Campus Team DD



- **Teams von ehemaligen Studenten der Hochschulen**
 - **Workshops, Recruitingveranstaltungen, Kontaktmessen**
 - **TU DD: ca. 40 Termine im Jahr**
 - **Kontaktliste**
- **Campus Challenge**
 - **jährlicher landesweiter Fallstudien-Wettbewerb**
 - **2009: 31 deutsche Hochschulen**
 - **Gewinner 2009: TU Dresden!**
- **Zentraler Anlaufpunkt**
 - **<http://entdecke-accenture.com>**

Anhang



Anhang - Kennzahldefinitionen

Base Metrics

Metric	Definition and Formula
Budget at Completion (BAC)	<ul style="list-style-type: none">● Budget for the task, summary task, phase or other WBS component● BAC = Baseline budget expressed in days or hours, not dollars
Actual Cost (AC)	<ul style="list-style-type: none">● Actual cost of any work that has been performed● AC = Amount of effort already spent or “burned” expressed in terms of days or hours not dollars

Base Metrics (Cont)

Metric	Definition and Formula
Earned Value (EV)	<ul style="list-style-type: none">● Total amount of effort, in hours or days, for tasks that are 100% complete● EV = 0 if task is NOT complete, EV = BAC, if task is complete
Planned Value (PV)	<ul style="list-style-type: none">● Budgeted amount of effort, measured in hours for tasks scheduled to be 100% complete● PV = BAC if task is due prior to status date PV = 0 if task is due after status date

Summary Metrics

Metric	Definition and Formula
Cost Variance (CV)	<ul style="list-style-type: none">● The difference between the actual costs and the budgeted (baseline) costs● CV = Earned Value – Actual Cost (EV-AC)
Schedule Variance (SV)	<ul style="list-style-type: none">● Determines whether the project is on, ahead, or behind schedule● SV = Earned Value – Planned Value (EV-PV)

Summary Metrics (Cont)

Metric	Definition and Formula
Cost Performance Index (CPI)	<ul style="list-style-type: none">● The ratio of budgeted cost to actual cost used to predict the magnitude of a possible cost overrun or under-run at a given point in time● CPI = Earned Value/Actual Cost (EV/AC)
Schedule Performance Index (SPI)	<ul style="list-style-type: none">● The ratio of budgeted cost to planned cost used to predict the magnitude of a possible cost overrun or under-run at a given point in time● SPI = Earned Value/Planned Value (EV/PV)

Forecast Metrics

Metric	Definition and Formula
To-Complete Performance Index (TCPI)	$(BAC - EV) / (BAC - AC)$ (Budget at Complete – Total Earned Value) / (Total Budget at Complete – Actual Cost)
Statistical Estimate to Complete (STAT ETC)	$(BAC - EV) / CPI$ (Budget at Complete – Earned Value) / Cost Performance Index
Statistical Estimate at Completion (STAT EAC)	$AC + STAT\ ETC$ Actual Cost + Statistical Estimate to Complete

Forecast Metrics

Metric	Definition and Formula
Statistical Variance at Completion (STAT VAC)	BAC – STAT EAC Budget at Complete – Statistical Estimate at Completion
Project Estimate to Complete (PROJ ETC)	Recorded from team Turnaround Document
Project Estimate at Completion (PROJ EAC)	AC + PROJ ETC Actual Cost + Project Estimate to Complete
Project Variance at Completion (PROJ VAC)	N/A

ETC is called “Remaining Work” in MS Project