

**“Project Management Using Earned Value”
Case Study Solution 20.1**



20.1

CASE

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**Schedule
Traceability**

SOLUTION

1. The milestones for System Requirements Review (SRR), Integrated Baseline Review (IBR), Preliminary Design Review (PDR) Engineering Prototype Available, and System Software Review (SSR) trace between the Master and Intermediate levels and between the Intermediate and Detail levels. In addition, milestones 1, 5 and 8 trace from the Intermediate to the Master Schedule, and are also on the Detail Schedule; therefore they trace from the Detail to the Intermediate Schedule.

Time spans trace within the Master Schedule; within the Intermediate Schedule and between the Master and Intermediate Schedules.

Time spans do not trace within the Detail Schedule or between the Intermediate and Detail Schedules. The Control Account start date is 15 July Year 01 but the first two tasks are scheduled to start on 1 July Year 01 on the Detail Schedule. (We do not even know if we are looking at current or baseline schedule information on the Detail Schedule).

2. The Major Interface Milestones are meaningful on the Master, Intermediate and Detail Schedules. The Program Milestones are not defined: we do not know what Program Milestones 1, 5 and 8 are. There should be a milestone dictionary describing completion/exit criteria for each milestone. In addition, we would also expect to see some control account level milestones for the other work packages on the Detail Schedule. The completion/exit criteria should be defined for these control account level milestones also. (See page 3 of solution).

3. Work progress cannot be traced without statusing the Detail Schedule and determining BCWP. There is no progress evident at the detail level; based on the control account start date, we would expect to see some progress. Progress is evident at the Intermediate Schedule level, but not at the Master Schedule level. (See page 6 of the solution for one way to status the work progress on the CAP.)

4. Work Package #5 shows 180 Requirements @ 5 hours per requirement (900 hours), while the total BCWS reflects only 750 hours (or 150 Requirements @ 5 hours per requirement).

5. a. Generate all tiers of schedules from the same schedule database so the symbology is consistent. In addition, this will yield accurate time span traces if rolled up via the WBS structure.

b. Reflect current status at all schedule levels.

c. Signature blocks should be on the appropriate schedules.

d. Legends should be on all schedules.

e. Both current and baseline schedules should be shown at all levels.

SOLUTION

(Continued)

There are other areas of consideration when reviewing a scheduling system. The following questions should be answered:

- ◆ Does the baseline support the program/project objectives?
- ◆ Is all of the scope included in the schedule?
- ◆ How will changes be controlled?
- ◆ If resource loaded, is the schedule achievable? Are the resources available when scheduled?
Is the time phased budget consistent with the scheduled resources?
- ◆ Schedule procedures should be reviewed for completeness including verification that those responsible for the work develop the schedule.
- ◆ Does the overall system successfully address the dual reporting considerations of physical percent complete status to support earned value determination and accurate remaining duration forecasting for schedule analysis?
- ◆ Is the scheduling system being abused? (e.g., Are directed dates being used improperly?)

These questions cannot be answered relative to this particular case study as all of the information required is not available; however, they should be answered when conducting a review on a program.

SOLUTION (Continued)

Milestone Definition Addendum

Control Account: 1040ADC Date: 7/14/01 WBS No.: 1010501 CAM: Thad Baker

Work Package No.: 003

Milestone No.: 1

Description/Completion Criteria: 1st System Software risk list update, review with functional manager and coordination with Company Program Office.

Work Package No.: 003

Milestone No.: 2

Description/Completion Criteria: Complete working session with Program Office scheduler to provide network constraining relationships and probability distributions for each risk list item, root cause/analysis 1st level and development of mitigating alternative actions.

Work Package No.: 003

Milestone No.: 3

Description/Completion Criteria: Review automated schedule risk outputs and modify network / distributions for quarterly report to the Program Office.

Work Package No.: 003

Milestone No.: 4

Description/Completion Criteria: Complete further detail root cause/analysis (2nd/3rd level analysis), where appropriate, finalize selection of mitigating action items and review with functional manager.

Work Package No.: 003

Milestone No.: 5

Description/Completion Criteria: Complete quarterly report update to risk list and risk plan for the System Software risks to the Program Office.

Work Package No.: 003

Milestone No.: 6

Description/Completion Criteria: Status Program Office on progress of assigned risk plan action items, update schedule risk network logic and changes in probability due to realization of actual completions and problems and identify any new risk items.

Work Package No.: 003

Milestone No.: 7

Description/Completion Criteria: Status Program Office on progress of assigned risk plan action items, update schedule risk network logic and changes in probability due to realization of actual completions and problems and identify any new risk items.

Work Package No.: 003

Milestone No.: 8

Description/Completion Criteria: Complete quarterly report update to risk list and risk plan for the System Software risks to the Program Office.

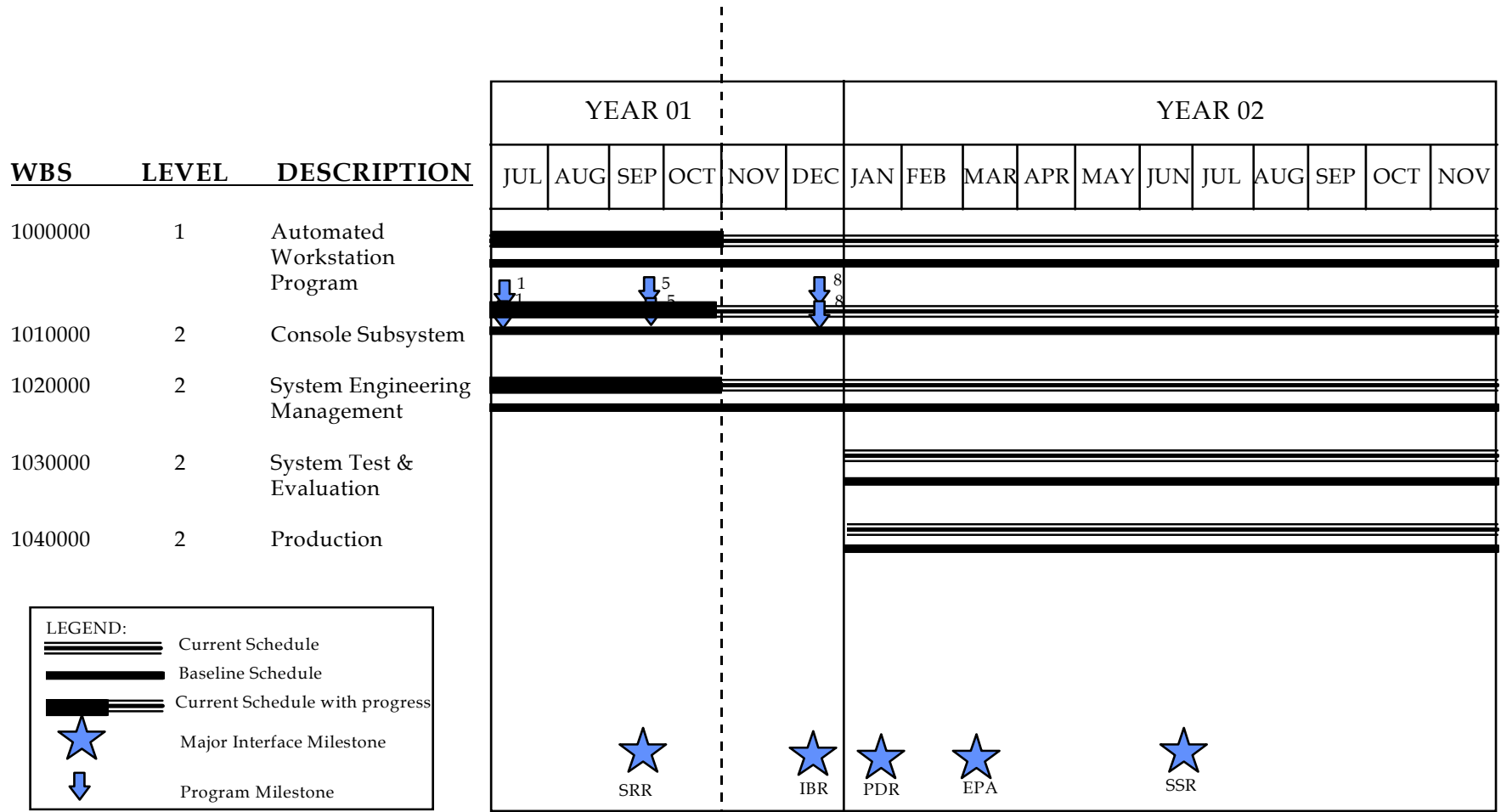
Work Package No.: 003

Milestone No.: 9

Description/Completion Criteria: Status Program Office on progress of assigned risk plan action items, update schedule risk network logic and changes in probability due to realization of actual completions and problems and identify any new risk items.

MASTER SCHEDULE

Page 1 of 1



LEGEND:

- Current Schedule
- Baseline Schedule
- Current Schedule with progress
- Major Interface Milestone
- Program Milestone

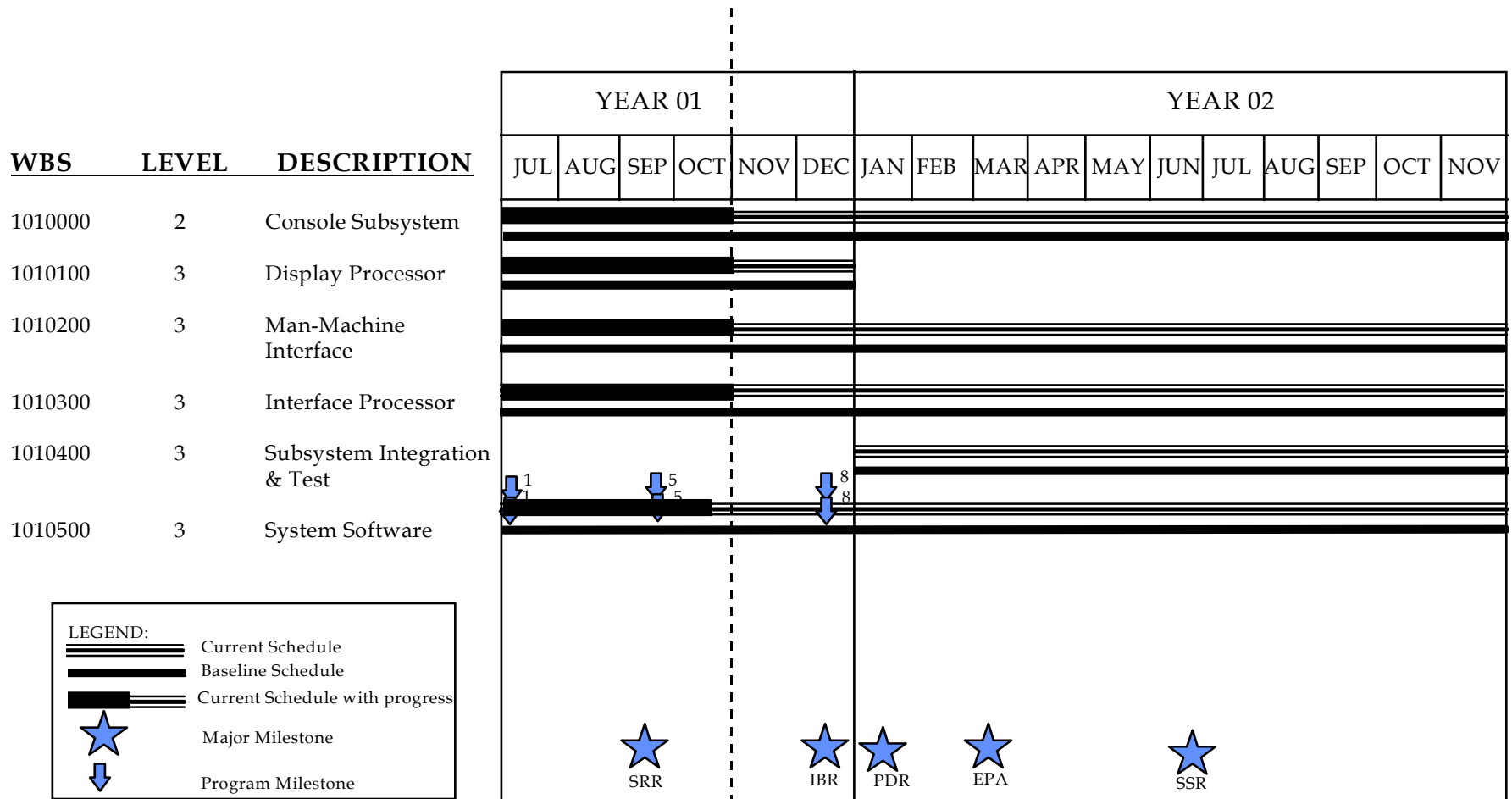
Andy Kao 1 Nov Year 01

TIME NOW

Program Manager

INTERMEDIATE SCHEDULE: Console Subsystem

Page 1 of 1



CONTROL ACCOUNT PLAN			PROGRAM: Automated Workstation				DATE: 7/15/Yr1		REV NO. Orig.		CONTROL ACCOUNT TITLE/NO.: 1040ADC PRE-SRR SYSTEM SOFTWARE DEVELOPMENT						PAGE: 1 OF 1		
WBS REFERENCE: 1010501			YEAR 01				YEAR 02		YEAR 02						TOTAL 12 MOS.				
SCHEDULE REFERENCE: ADA LVL1 001 R0			JUL AUG SEP OCT NOV DEC				JAN FEB MAR APR MAY JUN												
Element of Cost (EOC)			REFERENCE MILESTONES:				System Requirements Review		Integrated Baseline Review		Preliminary Design Review		Engineering Prototype Available		System Software Review				
L-Labor M-Mat1 S-SubKtr O-ODC																			
WORK TASK NO./EOC	WORK TASK DESCRIPTION	EV METHOD	CWA NO.	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	TOTAL 12 MOS.			
1	Management/administration of developing system software	1	A3G01	▲															
		LOE																	
		BCWS-HRS		23	30	35	20	20	20	20	20	20	20	20	20	35	283		
		BCWS-\$		\$1,650	\$2,153	\$2,511	\$1,435	\$1,435	\$1,435	\$1,435	\$1,435	\$1,435	\$1,435	\$1,435	\$1,435	\$2,511	\$20,305		
EOC: L		BCWP-HRS		23	30	35	20												
EOC: L		BCWP-\$		\$1,650	\$2,153	\$2,511	\$1,435												
2	Requirements Definition & Analysis to support SRR	5	A3G01	▲	31%	43%	26%												
		% Complete		31%	43%	26%													
		BCWS-HRS		57	80	50											187		
		BCWS-\$		\$4,090	\$5,740	\$3,588											\$13,418		
EOC: L		BCWP-HRS		57	80	50													
EOC: L		BCWP-\$		\$4,090	\$5,740	\$3,588													
3	Support Risk identification & Assessment	2	A3G01	●	●	●	●	●	○	○	○								
		Milestone																	
		BCWS-HRS		20	40	40	10	10	10	10							140		
		BCWS-\$		\$1,435	\$2,870	\$2,870	\$718	\$718	\$718	\$718							\$10,047		
EOC: L		BCWP-HRS		20	40	40	10												
EOC: L		BCWP-\$		\$1,435	\$2,870	\$2,870	\$718												
4	Software Integration Testing & Software/Hardware Interface Testing	6	A3G01									△							
		Units																	
		BCWS-HRS											50	160	250	260	720		
		BCWS-\$											\$3,588	\$11,480	\$17,938	\$18,655	\$51,661		
EOC: L		BCWP-HRS																	
EOC: L		BCWP-\$																	
5	Test Planning 180 Requirements (5 hrs per requirement)	5	A3G01			1%	8%	11%	13%	13%	26%	20%	13%	3%					
		% Complete				1%	8%	11%	13%	13%	26%	20%	13%	3%					
		BCWS-HRS				10	80		100	100	190	150	100	20		750			
		BCWS-\$				718	5,740		7,175	7,175	13,633	10,763	7,175	1,435		\$53,814			
EOC: L		BCWP-HRS			0	60													
EOC: L		BCWP-\$			\$0	\$4,305													
6	Design, Code & Unit Test	5	A3G01			1%	4%	2%	7%	7%	15%	15%	14%	14%	12%	11%			
		% Complete				1%	4%	2%	7%	7%	15%	15%	14%	14%	12%	11%			
		BCWS-HRS				59	173		336	336	709	709	664	664	600	550	4800		
		BCWS-\$				\$4,233	\$12,413		\$24,108	\$24,108	\$50,871	\$50,871	\$47,642	\$47,642	\$43,050	\$39,463	\$344,401		
EOC: L		BCWP-HRS			59	86													
EOC: L		BCWP-\$			\$4,233	\$6,171													
7	Software input - Preliminary Documentation & Release	3	A3G01									△							
		50/50																	
		BCWS-HRS												70	70	140			
		BCWS-\$												\$5,023	\$5,023	\$10,046			
EOC: L		BCWP-HRS																	
EOC: L		BCWP-\$																	
8	Interpret, analyze & coordinate system software design with System Engineering & Other Subsystems (10% of WP #6)	7	A3G01			▲													
		Apporioned																	
		BCWS-HRS				6	17		34	34	71	71	66	66	60	55	480		
		BCWS-\$				\$431	\$1,220		\$2,440	\$2,440	\$5,094	\$5,094	\$4,736	\$4,736	\$4,305	\$3,946	\$34,442		
EOC: L		BCWP-HRS			6	9													
EOC: L		BCWP-\$			\$431	\$646													
9	Purchase of compilers, research materials, DNA specialists, etc. supporting design	5	A3G01						△										
		% Complete																	
		BCWS-HRS																	
		BCWS-\$																	
EOC: M		BCWP-HRS																	
EOC: M		BCWP-\$																	
PAGE TOTALS	MONTHLY BCWS	HOURS	100	150	200	300	500	500	1000	950	900	1000	1000	1000	900	7500			
	DOLLARS	\$7,175	\$10,763	\$14,351	\$21,526	\$38,376	\$40,876	\$76,751	\$73,163	\$67,576	\$71,751	\$71,751	\$64,575	\$58,634					
	CUM BCWS	HOURS	100	250	450	750	1,250	1,750	2,750	3,700	4,600	5,600	6,600	7,500					
	DOLLARS	\$7,175	\$17,938	\$32,289	\$53,815	\$92,191	\$133,067	\$209,818	\$282,981	\$350,557	\$422,308	\$494,059	\$558,634						
	MONTHLY BCWP	HOURS	100	150	190	185													
	DOLLARS	\$7,175	\$10,763	\$13,633	\$13,275														
	CUM BCWP	HOURS	100	250	440	625													
	DOLLARS	\$7,175	\$17,938	\$31,571	\$44,846														
MONTHLY ACWP	HOURS	117	160	215	197														
DOLLARS	\$9,360	\$13,600	\$17,200	\$15,760															