An Overview of Earned Value Management (EVM)

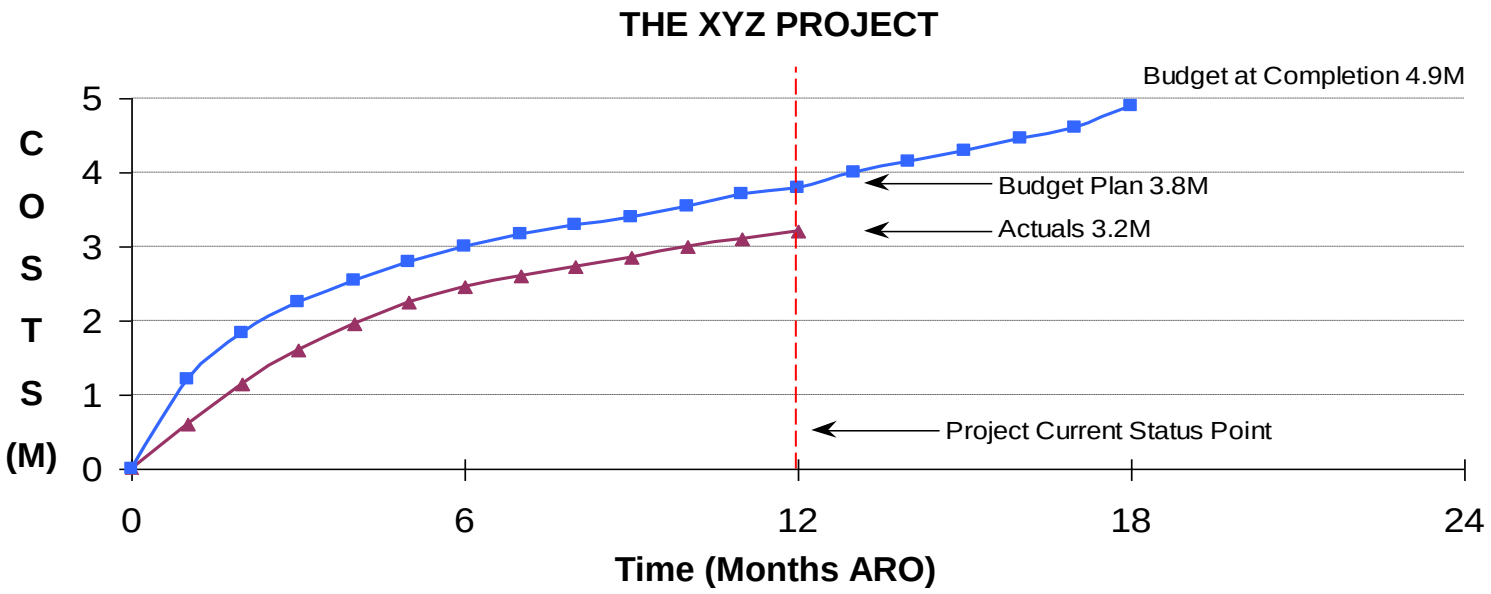
EVM Reporting and EVM with Agile

EDWARDS
PERFORMANCE SOLUTIONS

Using Earned Value to Track Progress

- What can you tell me about this project?
  - Is it… on schedule, ahead schedule, or behind schedule?
  - Is it… on budget, over budget, or under budget?

Will the project finish on time?

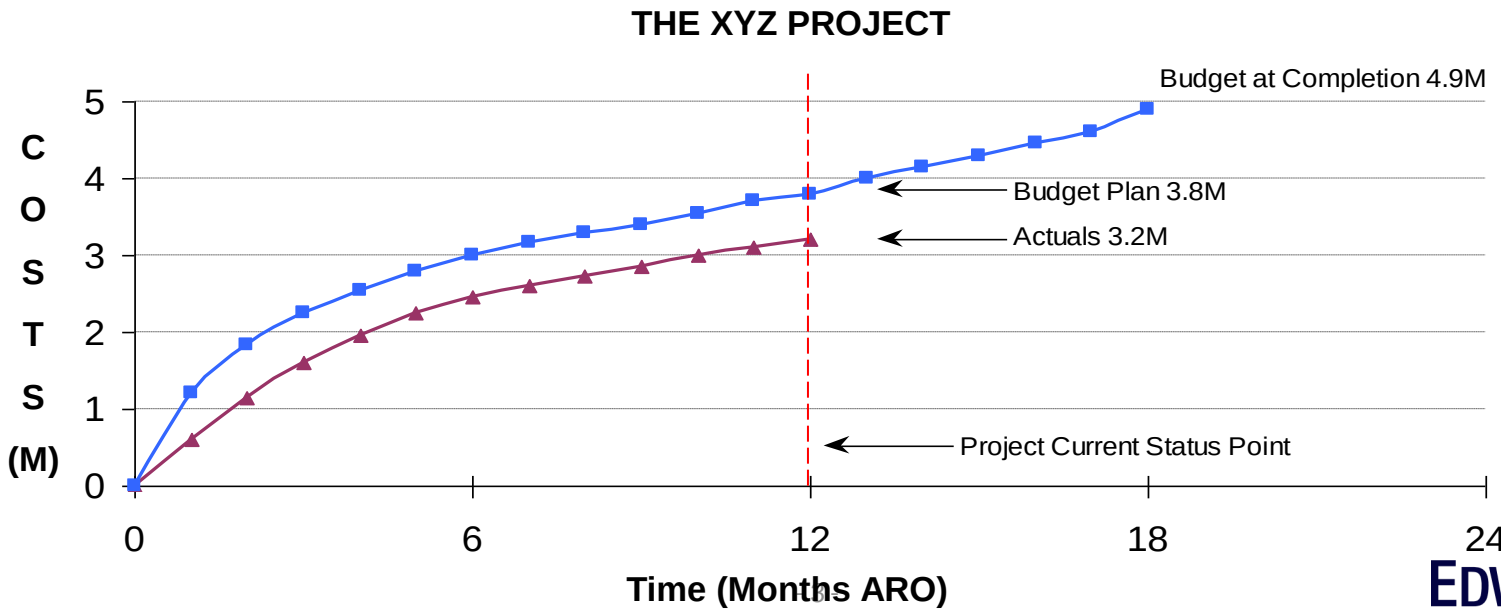


EDWARDS PERFORMANCE SOLUTIONS

Using Earned Value to Track Progress

- We know the original budget (the plan) (Blue Line)
- We know what we spent to date (Red Line) --BUT--
- Without additional information to show the project status
  we DON'T know what progress we have

-- Earned value metrics can give us the whole picture --



EDWARDS PERFORMANCE SOLUTIONS

Reporting on Project Progress with EVM

Earned Value Analysis

Earned Value Analysis

- Formulas helpful in Earned Value Analysis
  - Variance Measurements
    - *Cost Variance (CV) = EV – AC
      - EV = Earned Value
      - AC = Actual Cost
    - *Schedule Variance (SV) = EV – PV
      - EV = Earned Value
      - PV = Planned Value
    - *Cost Performance Index (CPI) = $\frac{EV}{AC}$
    - *Schedule Performance Index (SPI) = $\frac{EV}{PV}$
    - *To Complete Performance Index (TCPI) = $\frac{(BAC - EV)}{(EAC - AC)}$

* - seen on PMP and PMI-SP exams

Earned Value Analysis

- Formulas helpful in Earned Value Analysis
  - Performance Indices
    - Cost Variance Percentage (CV %) = $\frac{CV}{EV}$
    - Schedule Variance Percentage (SV %) = $\frac{SV}{PV}$
    - *Variance at Completion (VAC) = BAC - EAC

Earned Value Analysis

- Formulas helpful in Earned Value Analysis (cont.)
  - Overall Status
    - Project Percent Complete (% Complete) = $\frac{EV}{BAC}$ x 100%
    - Percent of Project Budget Spent (% Spent) = $\frac{AC}{BAC \text{ (or EAC)}}$ x 100%
  - Estimate at Completion
    - Mathematical EAC = $(BAC - EV) + AC = EAC_{(math)}$
    - Cost Performance EAC = $\frac{BAC}{CPI} = EAC_{(CPI)}$
    - Composite EAC = $\frac{(BAC - EV)}{(CPI \times SPI)} + AC = EAC_{(comp)}$

Earned Value Analysis

- Indicators to Look for in Earned Value Analysis

Measurement	 A Good Thing	 A Bad Thing
Cost Variance (CV)	0 or +	-
Schedule Variance (SV)	0 or +	-
CPI	≥1.0	<1.0
SPI	≥1.0	<1.0
VAC	0 or +	-
TCPI	≤1.0	>1.0

EVM Reporting

EVM – Reporting

EVM Metrics allow you to show how you are performing

EVM Metrics allow you to predict how you will perform in future

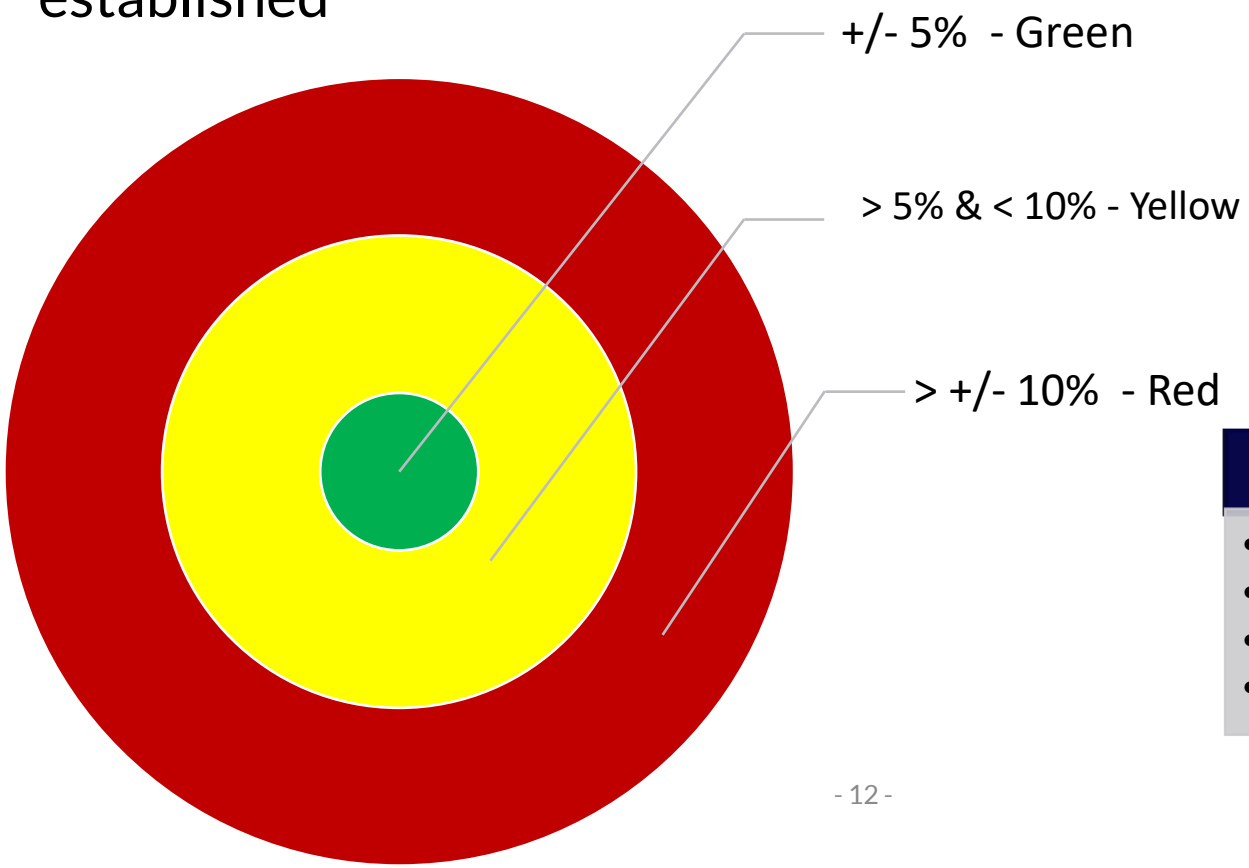
EVM Reporting can be very formal or informal

EVM Reporting can be done at different levels – Portfolio, Program, Project

EVM Reporting can be done on Traditional, Hybrid and Agile Projects

EVM Measurements – what is acceptable

- No project has every run perfectly
  - CV = $0, SV = $0, SPI = 1.0, CPI = 1.0
- When running a project with EVM, performance bands are established



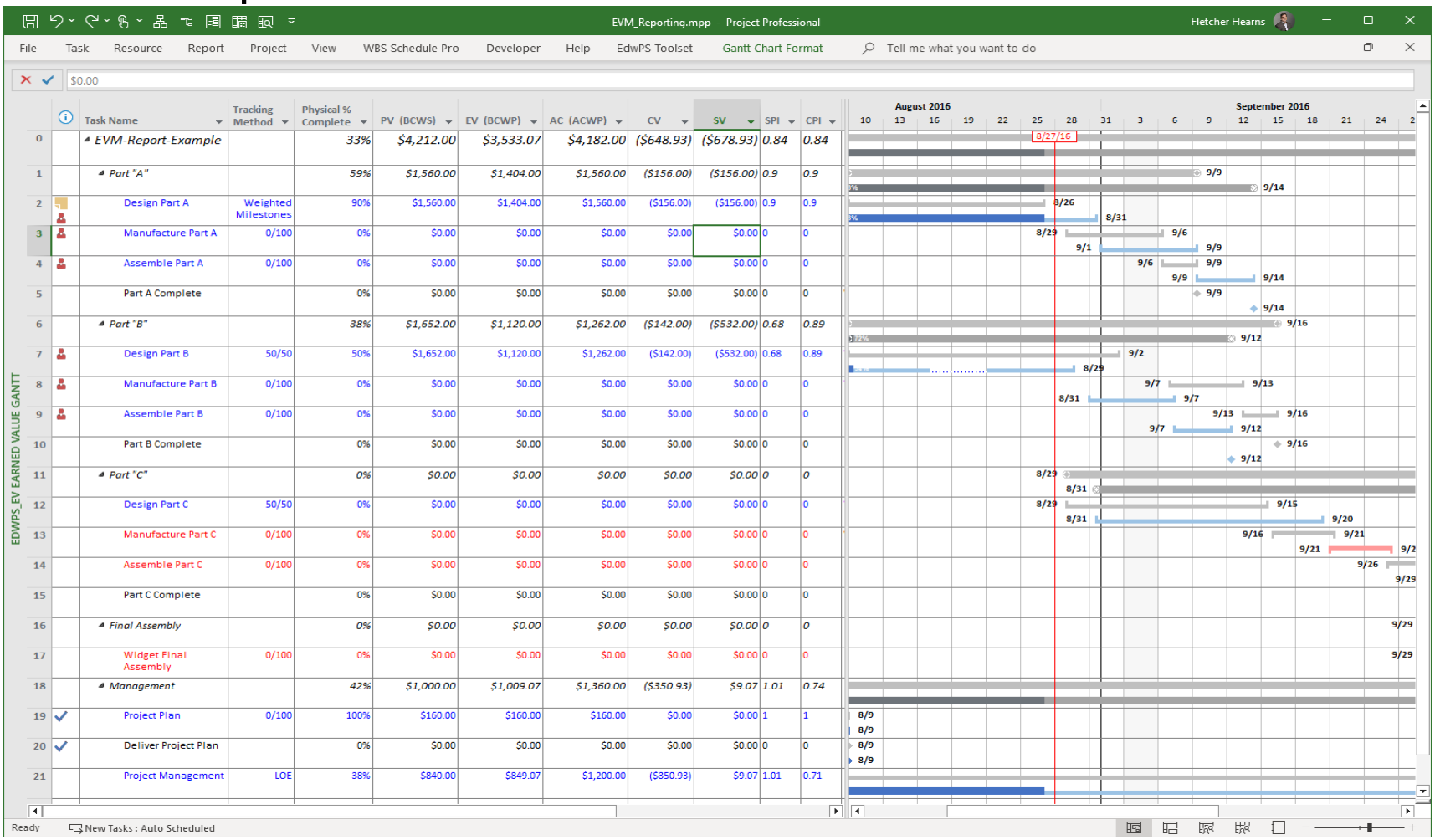
Why is too good bad

- Bad estimation?
- Quality Issue?
- Unpaid work hours?
- Bad/incomplete EVM data

EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Data View

- Create separate Gantt Chart to show metrics

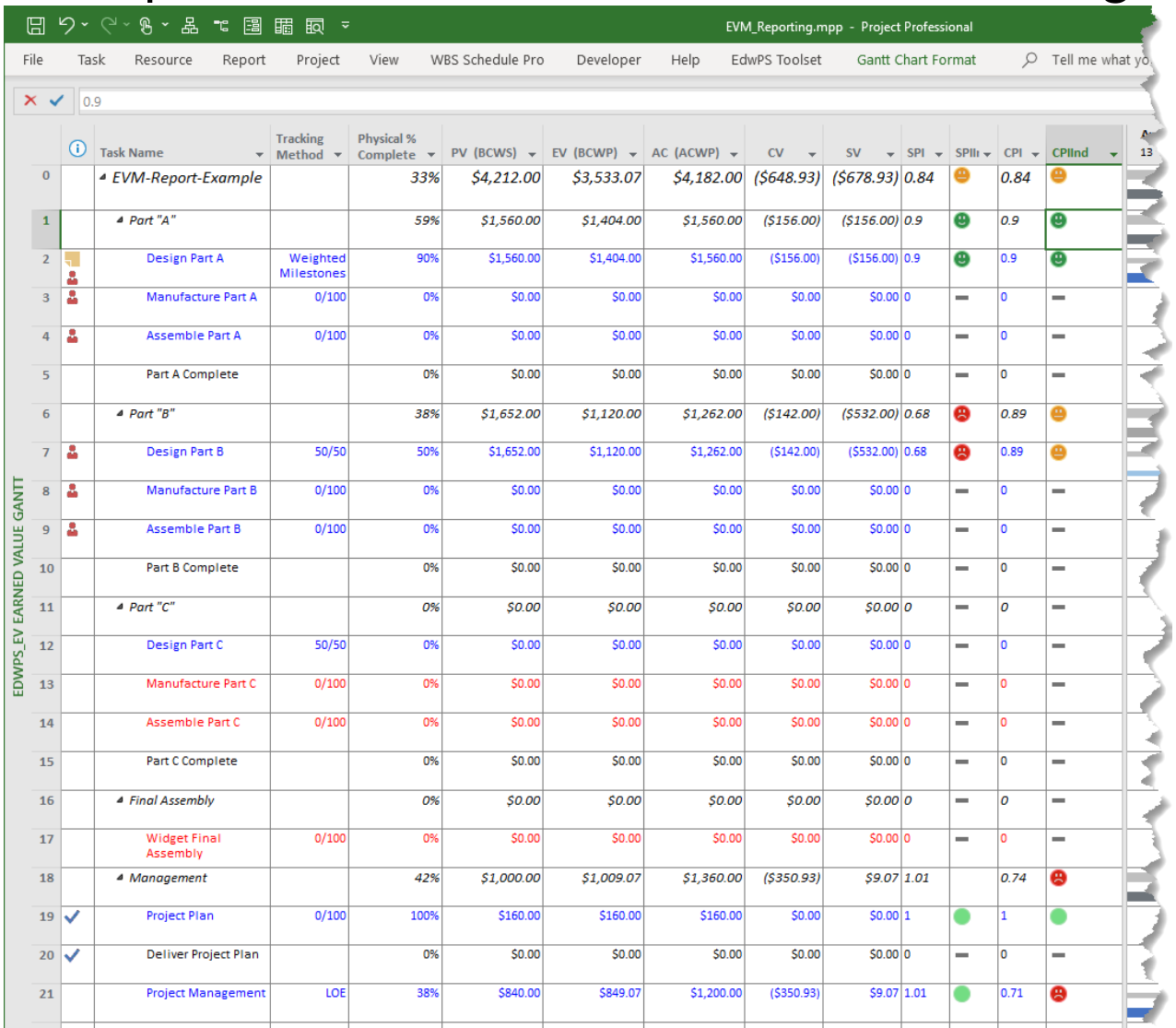


	Task Name	Tracking Method	Physical % Complete	PV (BCWS)	EV (BCWP)	AC (ACWP)	CV	SV	SPI	CPI
0	*EVM-Report-Example*		*33%*	*$4,212.00*	*$3,533.07*	*$4,182.00*	*($648.93)*	*($678.93)*	*0.84*	*0.84*
1	*Part "A"*		*59%*	*$1,560.00*	*$1,404.00*	*$1,560.00*	*($156.00)*	*($156.00)*	*0.9*	*0.9*
2	Design Part A	Weighted Milestones	90%	$1,560.00	$1,404.00	$1,560.00	($156.00)	($156.00)	0.9	0.9
3	Manufacture Part A	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
4	Assemble Part A	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
5	Part A Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
6	*Part "B"*		*38%*	*$1,652.00*	*$1,120.00*	*$1,262.00*	*($142.00)*	*($532.00)*	*0.68*	*0.89*
7	Design Part B	50/50	50%	$1,652.00	$1,120.00	$1,262.00	($142.00)	($532.00)	0.68	0.89
8	Manufacture Part B	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
9	Assemble Part B	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
10	Part B Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
11	*Part "C"*		*0%*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*0*	*0*
12	Design Part C	50/50	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
13	Manufacture Part C	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
14	Assemble Part C	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
15	Part C Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
16	*Final Assembly*		*0%*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*0*	*0*
17	Widget Final Assembly	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
18	*Management*		*42%*	*$1,000.00*	*$1,009.07*	*$1,360.00*	*($350.93)*	*$9.07*	*1.01*	*0.74*
19	Project Plan	0/100	100%	$160.00	$160.00	$160.00	$0.00	$0.00	1	1
20	Deliver Project Plan		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0	0
21	Project Management	LOE	38%	$840.00	$849.07	$1,200.00	($350.93)	$9.07	1.01	0.71

EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Graphical Indicators

- Create separate Gantt Chart to show metrics with graphics



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2	Design Part A	Weighted Milestones	90%	$1,560.00	$1,404.00	$1,560.00	($156.00)	($156.00)	0.9		0.9	
3	Manufacture Part A	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
4	Assemble Part A	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
5	Part A Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
6	*Part "B"*		*38%*	*$1,652.00*	*$1,120.00*	*$1,262.00*	*($142.00)*	*($532.00)*	*0.68*		*0.89*	
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8	Manufacture Part B	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
9	Assemble Part B	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
10	Part B Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
11	*Part "C"*		*0%*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*0*		*0*	
12	Design Part C	50/50	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
13	Manufacture Part C	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
14	Assemble Part C	0/100	0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
15	Part C Complete		0%	$0.00	$0.00	$0.00	$0.00	$0.00	0		0	
16	*Final Assembly*		*0%*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*$0.00*	*0*		*0*	
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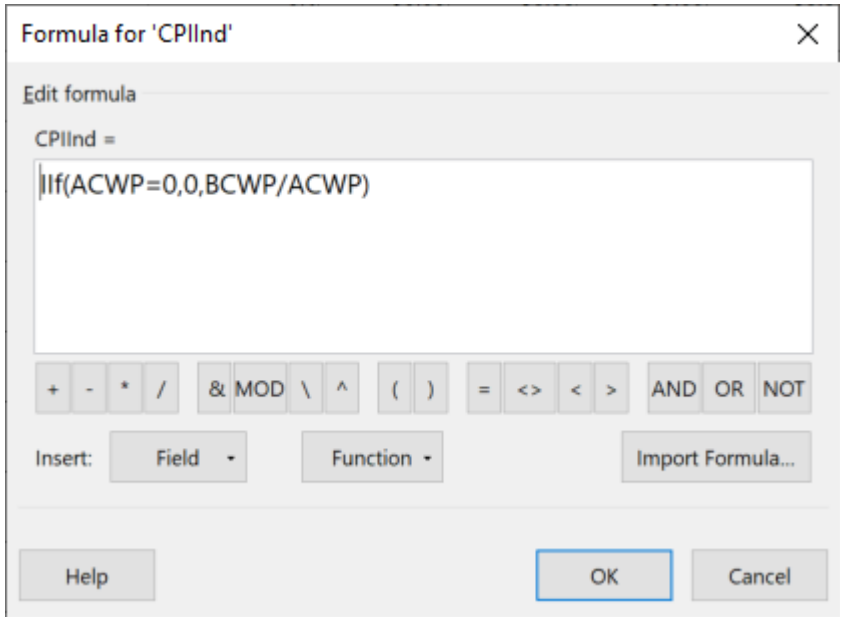
EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Graphical Indicators

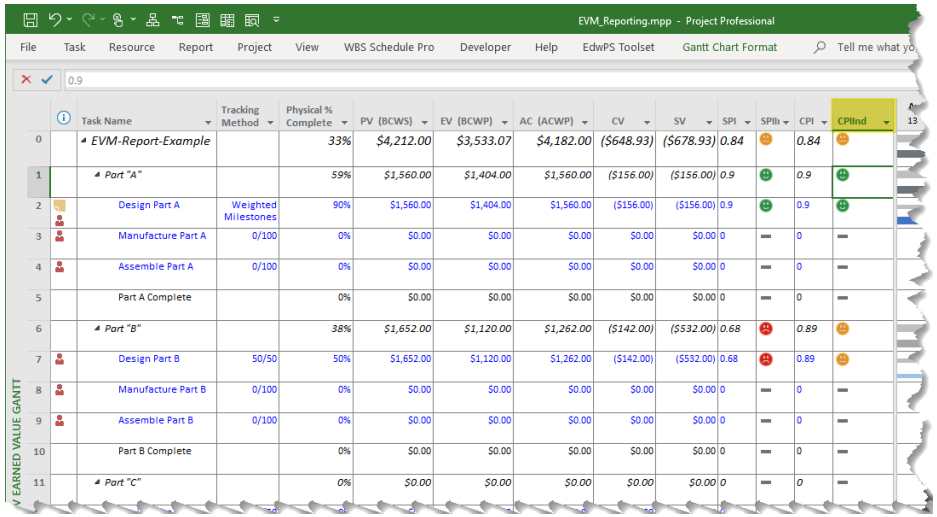
- Create Custom fields to hold indicator as number
- Apply Graphical Indicator to field for display
- Example: CPIInd (CPI Indicator)

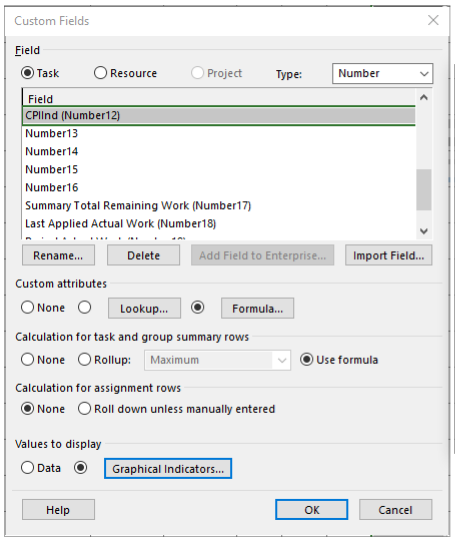


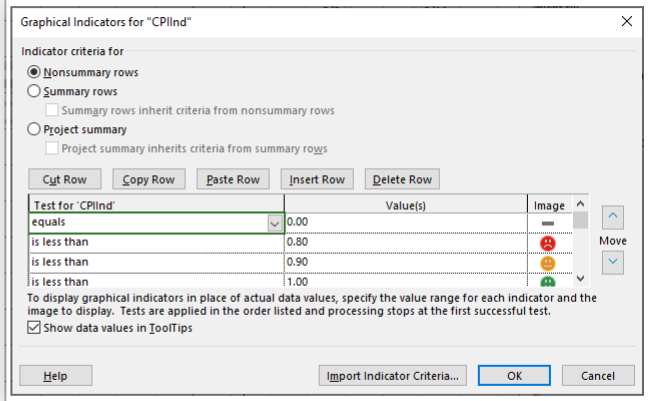
EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Graphical Indicators

- Create rules to determine which Graphical Indicator is shown
- Project stop after 1st rule that is true – check the order





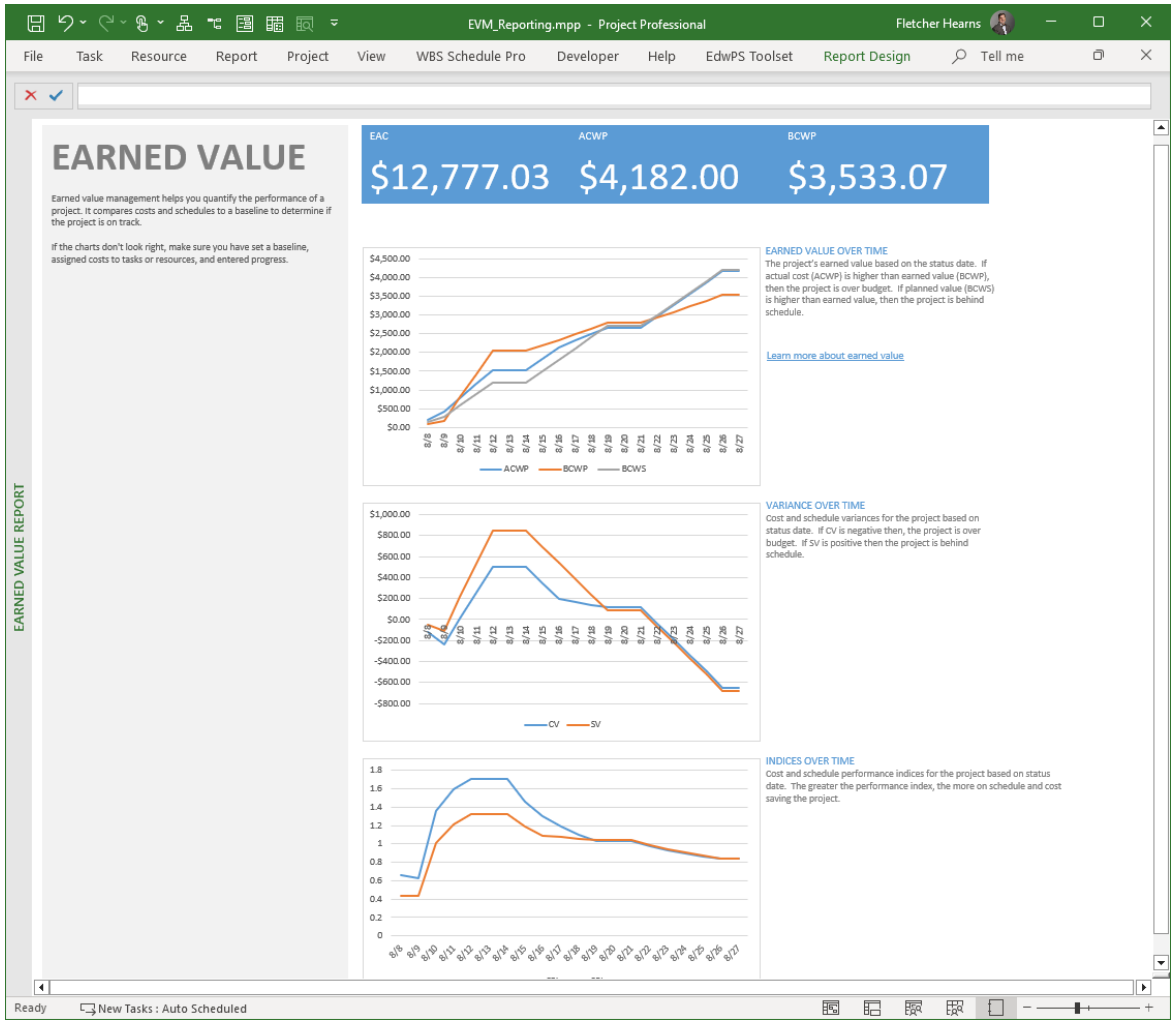


Make sure to roll formula and graphics up to summary rows

EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Reports

- MS Project has built in EVM Reports
  - Report should be "tweaked" to show only up to the status date.



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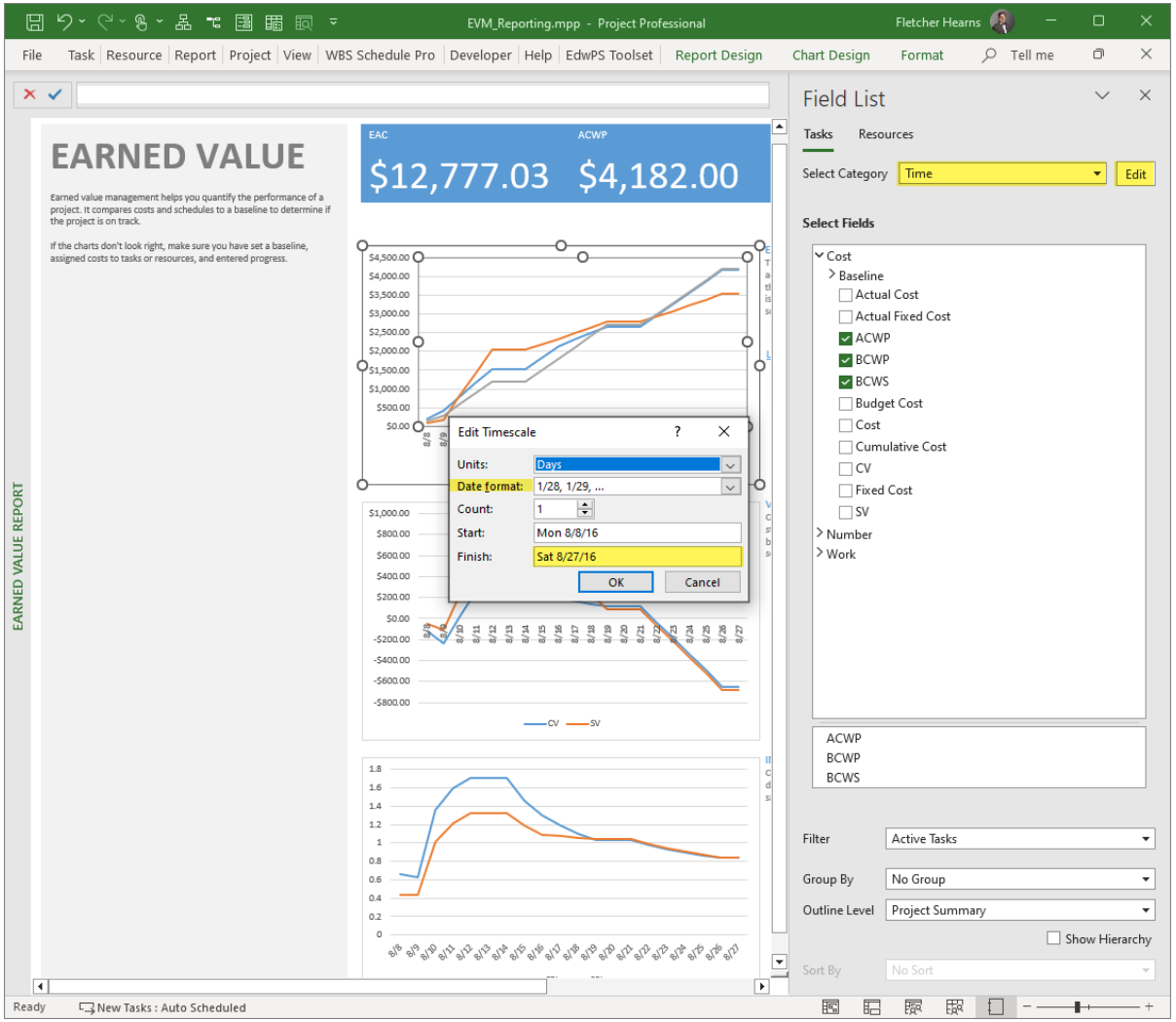
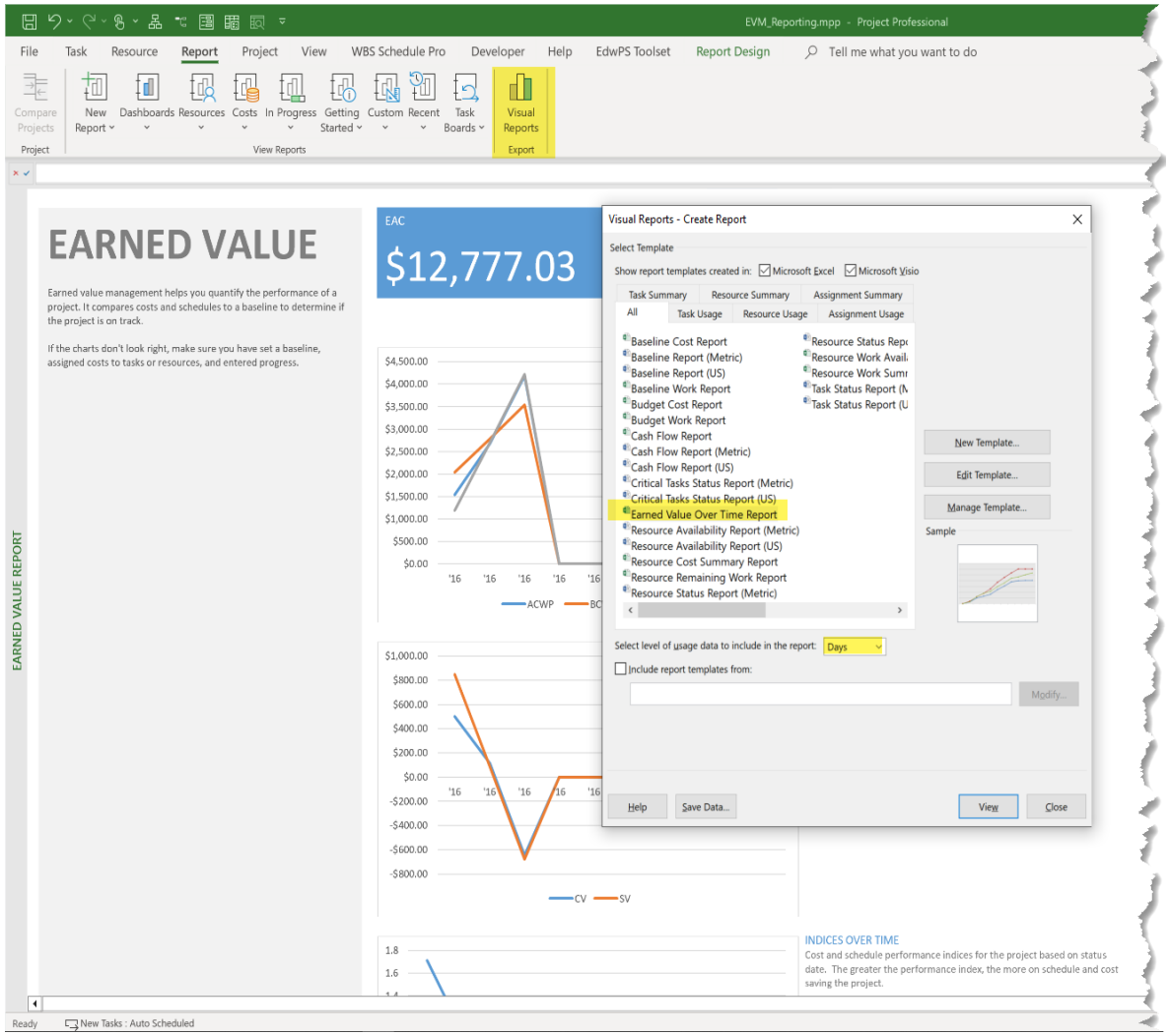


EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – External Report

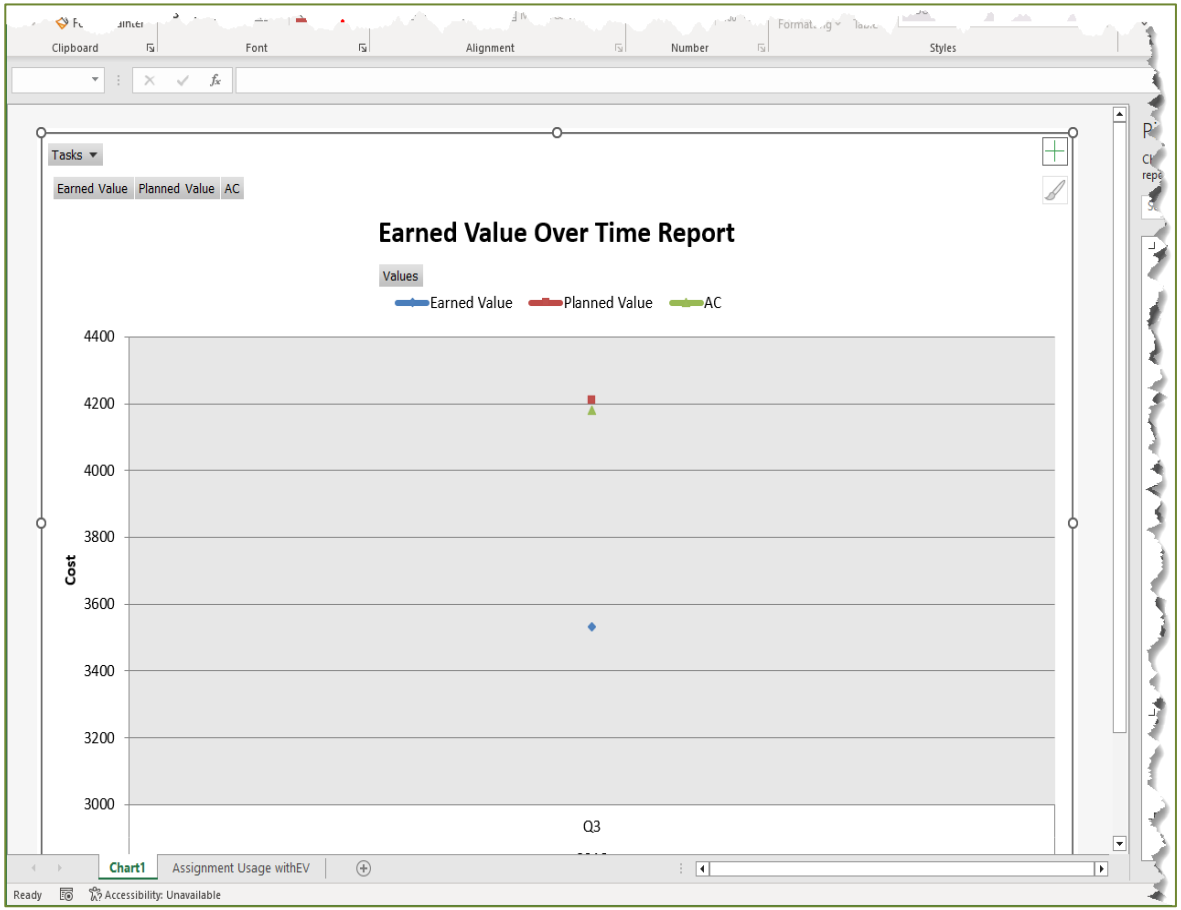


- Project allows you to use "Visual Reports" to export the EVM data.
- Creates Excel file with EVM information
- Power Pivot Table with data up to the current "Status Date"

EDWARDS PERFORMANCE SOLUTIONS

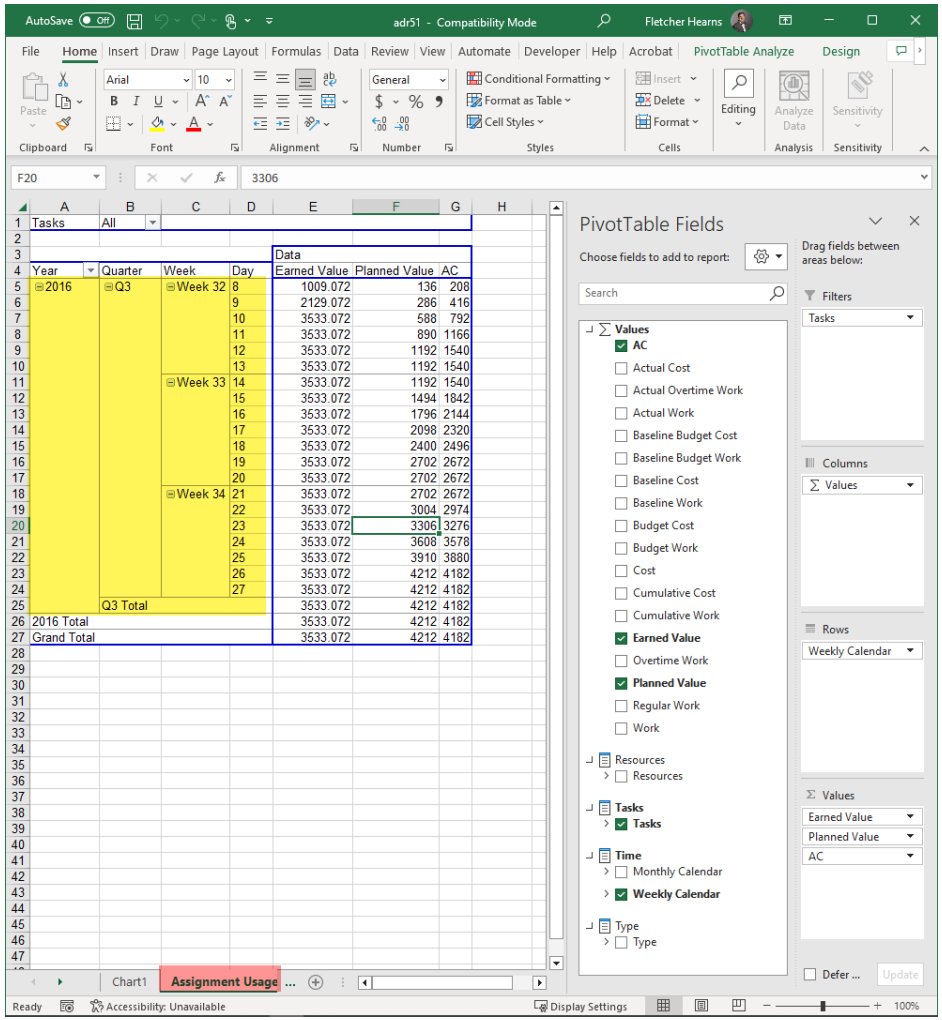
EVM Metrics Reporting – External Report

- Project will save data to Excel file with 2 worksheets
- Chart with EVM information
- Worksheet with PowerPivot table



EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – External Report



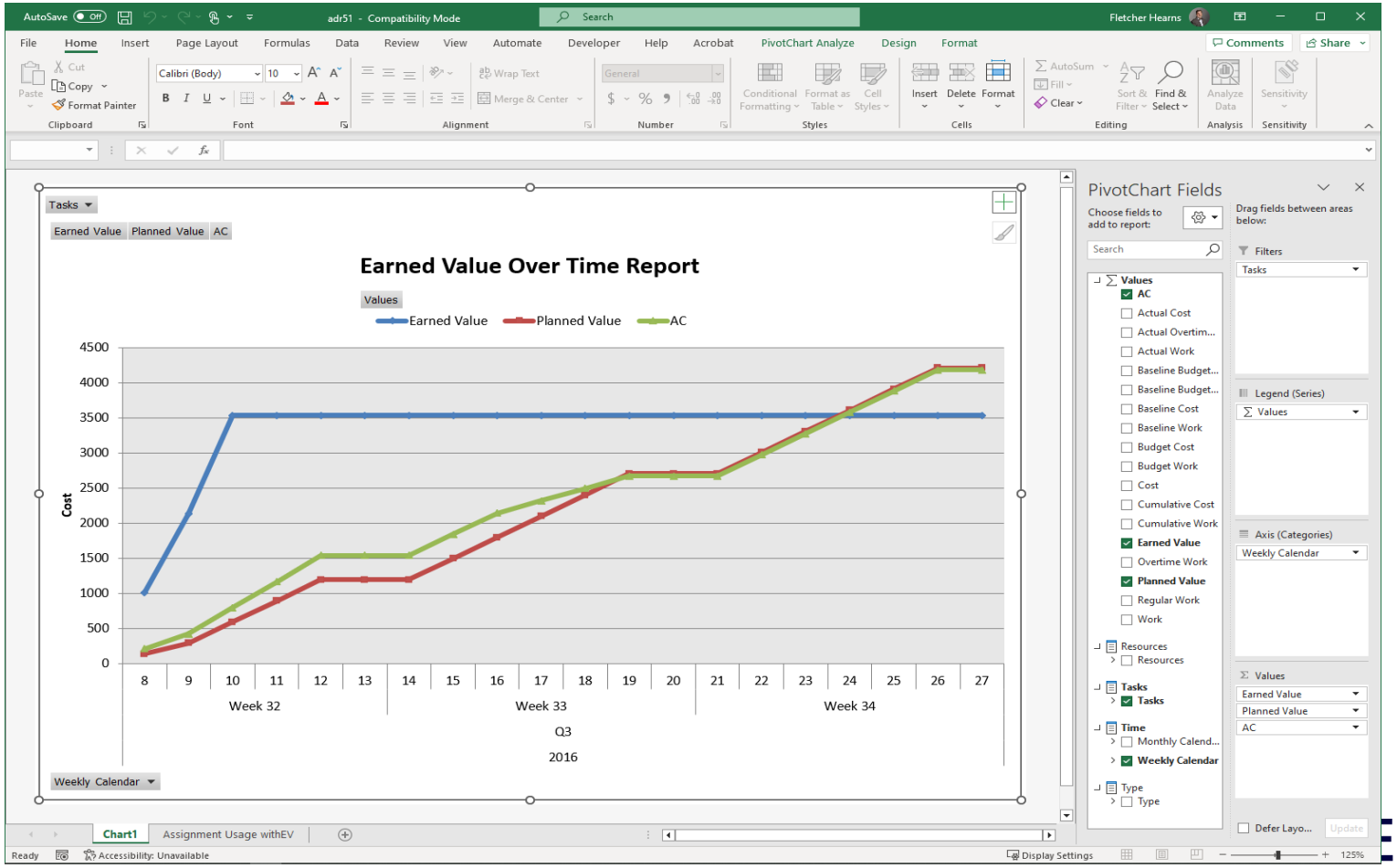
Tasks	All						
				Data			
Year	Quarter	Week	Day	Earned Value	Planned Value	AC	
2016	Q3	Week 32	8	1009.072	136	208	
			9	2129.072	286	416	
			10	3533.072	588	792	
			11	3533.072	890	1166	
			12	3533.072	1192	1540	
			13	3533.072	1192	1540	
		Week 33	14	3533.072	1192	1540	
			15	3533.072	1494	1842	
			16	3533.072	1796	2144	
			17	3533.072	2098	2320	
			18	3533.072	2400	2496	
			19	3533.072	2702	2672	
			20	3533.072	2702	2672	
		Week 34	21	3533.072	2702	2672	
			22	3533.072	3004	2974	
			23	3533.072	3306	3276	
			24	3533.072	3608	3578	
			25	3533.072	3910	3880	
			26	3533.072	4212	4182	
			27	3533.072	4212	4182	
	Q3 Total			3533.072	4212	4182	
2016 Total				3533.072	4212	4182	
Grand Total				3533.072	4212	4182	

- Expanded Pivot Table dates to days (short project)
- Data is only shown up to the status date

EDWARDS PERFORMANCE SOLUTIONS

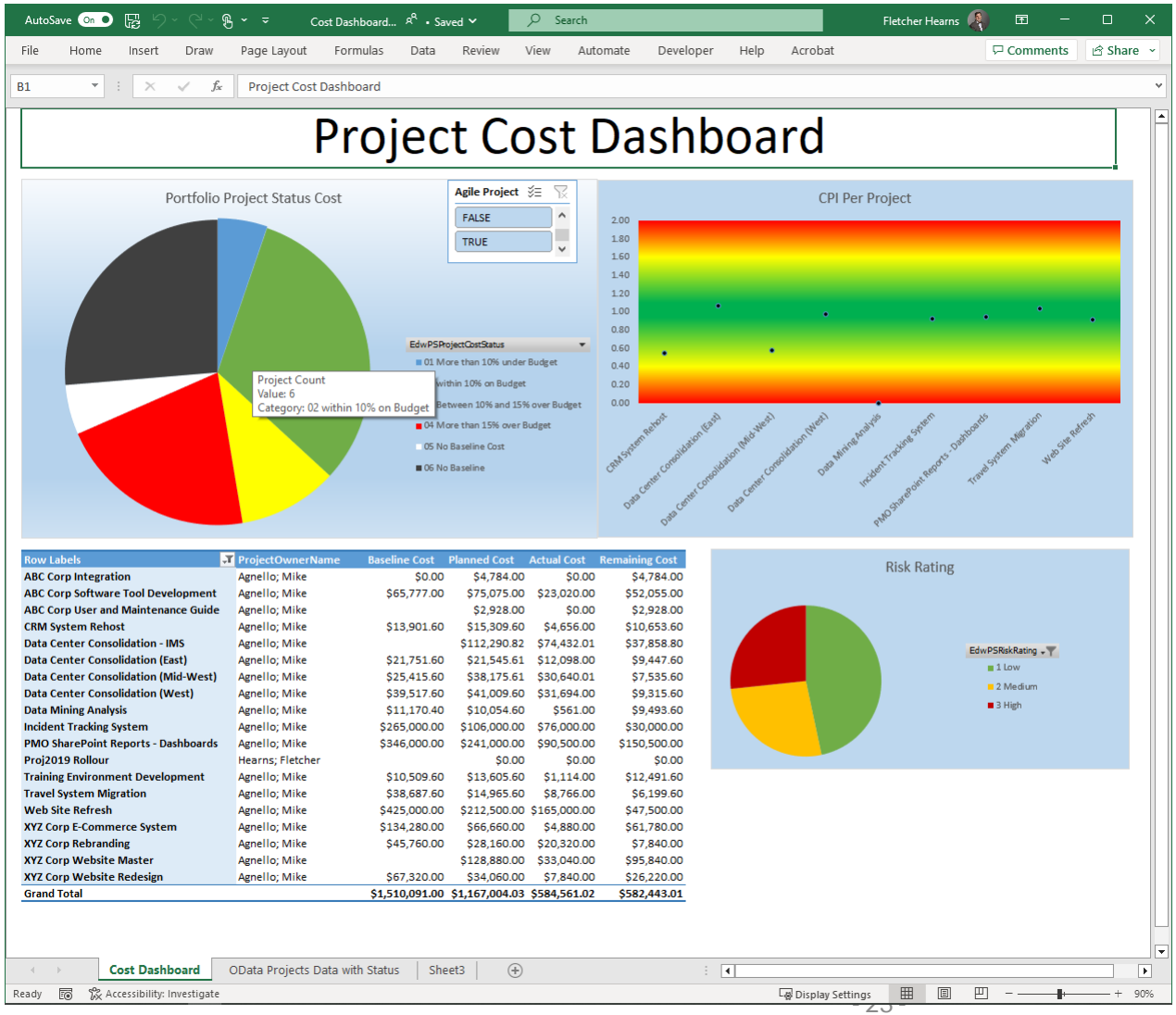
EVM Metrics Reporting – External Report

- Chart with time expanded to days (short project)
- Data is only shown up to the status date



EDWARDS PERFORMANCE SOLUTIONS

EVM Metrics Reporting – Portfolio Reporting



Row Labels	ProjectOwnerName	Baseline Cost	Planned Cost	Actual Cost	Remaining Cost
ABC Corp Integration	Agnello; Mike	$0.00	$4,784.00	$0.00	$4,784.00
ABC Corp Software Tool Development	Agnello; Mike	$65,777.00	$75,075.00	$23,020.00	$52,055.00
ABC Corp User and Maintenance Guide	Agnello; Mike		$2,928.00	$0.00	$2,928.00
CRM System Rehost	Agnello; Mike	$13,901.60	$15,309.60	$4,656.00	$10,653.60
Data Center Consolidation - IMS	Agnello; Mike		$112,290.82	$74,432.01	$37,858.80
Data Center Consolidation (East)	Agnello; Mike	$21,751.60	$21,545.61	$12,098.00	$9,447.60
Data Center Consolidation (Mid-West)	Agnello; Mike	$25,415.60	$38,175.61	$30,640.01	$7,535.60
Data Center Consolidation (West)	Agnello; Mike	$39,517.60	$41,009.60	$31,694.00	$9,315.60
Data Mining Analysis	Agnello; Mike	$11,170.40	$10,054.60	$561.00	$9,493.60
Incident Tracking System	Agnello; Mike	$265,000.00	$106,000.00	$76,000.00	$30,000.00
PMO SharePoint Reports - Dashboards	Agnello; Mike	$346,000.00	$241,000.00	$90,500.00	$150,500.00
Proj2019 Rollour	Hearns; Fletcher		$0.00	$0.00	$0.00
Training Environment Development	Agnello; Mike	$10,509.60	$13,605.60	$1,114.00	$12,491.60
Travel System Migration	Agnello; Mike	$38,687.60	$14,965.60	$8,766.00	$6,199.60
Web Site Refresh	Agnello; Mike	$425,000.00	$212,500.00	$165,000.00	$47,500.00
XYZ Corp E-Commerce System	Agnello; Mike	$134,280.00	$66,660.00	$4,880.00	$61,780.00
XYZ Corp Rebranding	Agnello; Mike	$45,760.00	$28,160.00	$20,320.00	$7,840.00
XYZ Corp Website Master	Agnello; Mike		$128,880.00	$33,040.00	$95,840.00
XYZ Corp Website Redesign	Agnello; Mike	$67,320.00	$34,060.00	$7,840.00	$26,220.00
Grand Total		$1,510,091.00	$1,167,004.03	$584,561.02	$582,443.01

Using MS Project Server, you can report on entire Portfolio of Projects

EDWARDS PERFORMANCE SOLUTIONS

EVM Reporting – Formal Reports – Gov't

- Federal Contract may require formal CPR* EVM reporting

Title	Frequency	Description
Format 1 – WBS	Monthly or Weekly	Reports performance data (BCWS, BCWP, ACWP) by reporting WBS elements for the current reporting period as well as cumulative
Format 2 – Organizational Categories	Monthly or Weekly	Reports same data as format 1 but identified by contractor labor categories.
Format 3 – Baseline	Monthly or Quarterly	Data can be plotted to determine if there has been a shift in the baseline curve since the
Format 4 – Staffing	Monthly or Quarterly	Staffing data plotted over time and correlated to major milestones and activities on the contract schedule shows accuracy of labor
Format 5 – Problem Areas	Monthly	Correlated data from formats 1 and 2 to understand the reasons for variances. Helps with the integrated assessment.

** - Cost (Contract) Performance Reports*

- Format 1, 2 and 3 most common
- Format 4 is used to track labor categories
- Format 5 used when correct action is need/required

EVM Reporting – Formal Reports – Format 1

- Format 1 – WBS

CLASSIFICATION (When Filled In)

CONTRACT PERFORMANCE REPORT
FORMAT 1 - WORK BREAKDOWN STRUCTURE DOLLARS IN _____

FORM APPROVED
OMB No. 0704-0188

The public reporting burden for this collection of information is estimated to average 3.1 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports (0704-0188), 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. **PLEASE DO NOT RETURN YOUR FORM TO THIS ADDRESS. SUBMIT COMPLETED FORMS IN ACCORDANCE WITH CONTRACTUAL REQUIREMENTS.**

1. CONTRACTOR	2. CONTRACT		3. PROGRAM	4. REPORT PERIOD
a. NAME	a. NAME		a. NAME	a. FROM (YYYYMMDD)
b. LOCATION (Address and ZIP Code)	b. NUMBER		b. PHASE	b. TO (YYYYMMDD)
	c. TYPE	d. SHARE RATIO	c. EVMS ACCEPTANCE NO YES (YYYYMMDD)	

5. CONTRACT DATA

a. QUANTITY	b. NEGOTIATED COST	c. ESTIMATED COST OF AUTHORIZED UNPRICED WORK	d. TARGET PROFIT/ FEE	e. TARGET PRICE	f. ESTIMATED PRICE	g. CONTRACT CEILING	h. ESTIMATED CONTRACT CEILING	i. DATE OF OTB/OTS (YYYYMMDD)

6. ESTIMATED COST AT COMPLETION	MANAGEMENT ESTIMATE AT COMPLETION (1)	CONTRACT BUDGET BASE (2)	VARIANCE (3)	7. AUTHORIZED CONTRACTOR REPRESENTATIVE	
				a. NAME (Last, First, Middle Initial)	b. TITLE
a. BEST CASE				c. SIGNATURE	d. DATE SIGNED (YYYYMMDD)
b. WORST CASE					
c. MOST LIKELY					

8. PERFORMANCE DATA

ITEM (1)	CURRENT PERIOD: BUDGETED COST WORK SCHEDULED (2)	CURRENT PERIOD: BUDGETED COST WORK PERFORMED (3)	CURRENT PERIOD: ACTUAL COST WORK PERFORMED (4)	CURRENT PERIOD: VARIANCE SCHEDULE (5)	CURRENT PERIOD: VARIANCE COST (6)	CUMULATIVE TO DATE: BUDGETED COST WORK SCHEDULED (7)	CUMULATIVE TO DATE: BUDGETED COST WORK PERFORMED (8)	CUMULATIVE TO DATE: ACTUAL COST WORK PERFORMED (9)	CUMULATIVE TO DATE: VARIANCE SCHEDULE (10)	CUMULATIVE TO DATE: VARIANCE COST (11)	REPROGRAMMING ADJUSTMENTS: COST VARIANCE (12a)	REPROGRAMMING ADJUSTMENTS: SCHEDULE VARIANCE (12b)	REPROGRAMMING ADJUSTMENTS: BUDGET (13)	AT COMPLETION: BUDGETED (14)	AT COMPLETION: ESTIMATED (15)	AT COMPLETION: VARIANCE (16)
a. WORK BREAKDOWN STRUCTURE ELEMENT																
b. COST OF MONEY																
c. GENERAL AND ADMINISTRATIVE																
d. UNDISTRIBUTED BUDGET																
e. SUB TOTAL (PERFORMANCE MEASUREMENT BASELINE)																
f. MANAGEMENT RESERVE																
g. TOTAL																
9. RECONCILIATION TO CONTRACT BUDGET BASE																
a. VARIANCE ADJUSTMENT																
b. TOTAL CONTRACT VARIANCE																

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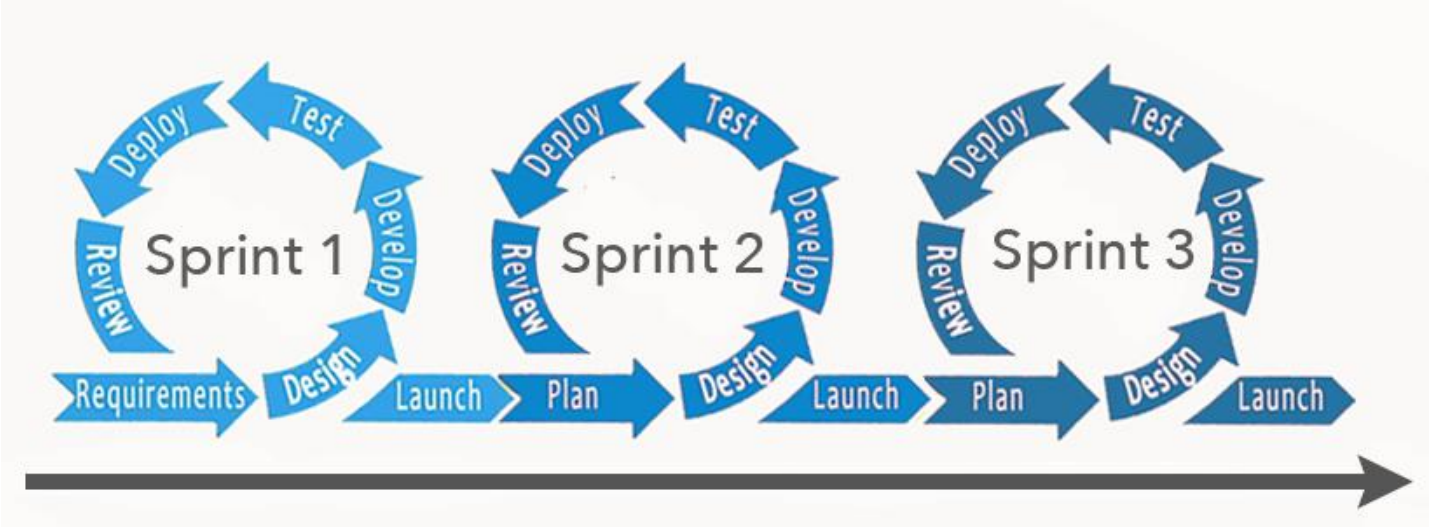
EDWARDS PERFORMANCE SOLUTIONS

EVM in an Agile World

EVM in an Agile World - What is Agile?

- Highly iterative methodology for project management
- Rolling wave gone CRAZY
- Functionality is the key driver – what do they want next
- Iterations (sprints are normally 2-4 weeks in duration)



EDWARDS
PERFORMANCE SOLUTIONS

EVM in and Agile World - What is Agile?

- Agile allows for constantly changing Requirement & Priority of Requirements
  - Does not work in all type of Project (Not good for construction)
- Agile comes from Software Development world in late ‘90 early ’00
- How to create the best product quickly, that satisfies the customers needs.

EVM in and Agile World

- How to track EVM when everything CAN/MAY/WILL change?
- Establish how Cost will be tracked – two main methods
  - Number of Iterations at cost by day?
  - Number of Story Points that will be completed for Budget
    - Each Story Point is valued at Budget/Total SPs (ex. $1000.00 per point)
- When does the "Project" end – for tacking purpose
  - Next "Product Release"
  - Minimum Viable Product
  - Product Delivery
  - Out of Time/ Out of Money

EVM in and Agile World – Discipline/Process

- **Properly executed Agile requires a degree of structure and cadence discipline**
  - Is an efficient process
  - Is a bit deficient in control processes necessary for Earned Value metrics
- **EVM requires attention to detail**
  - Consistent repeatable schedule control processes
  - Proper management of Performance Measurement Baseline (PMB)
- **To coexist**
  - Both need to make accommodations to support the other
  - Agile needs to be … agile
  - Proper traceability and records must be maintained for Earned Value reporting
- **A project manager is an excellent fit for this task**

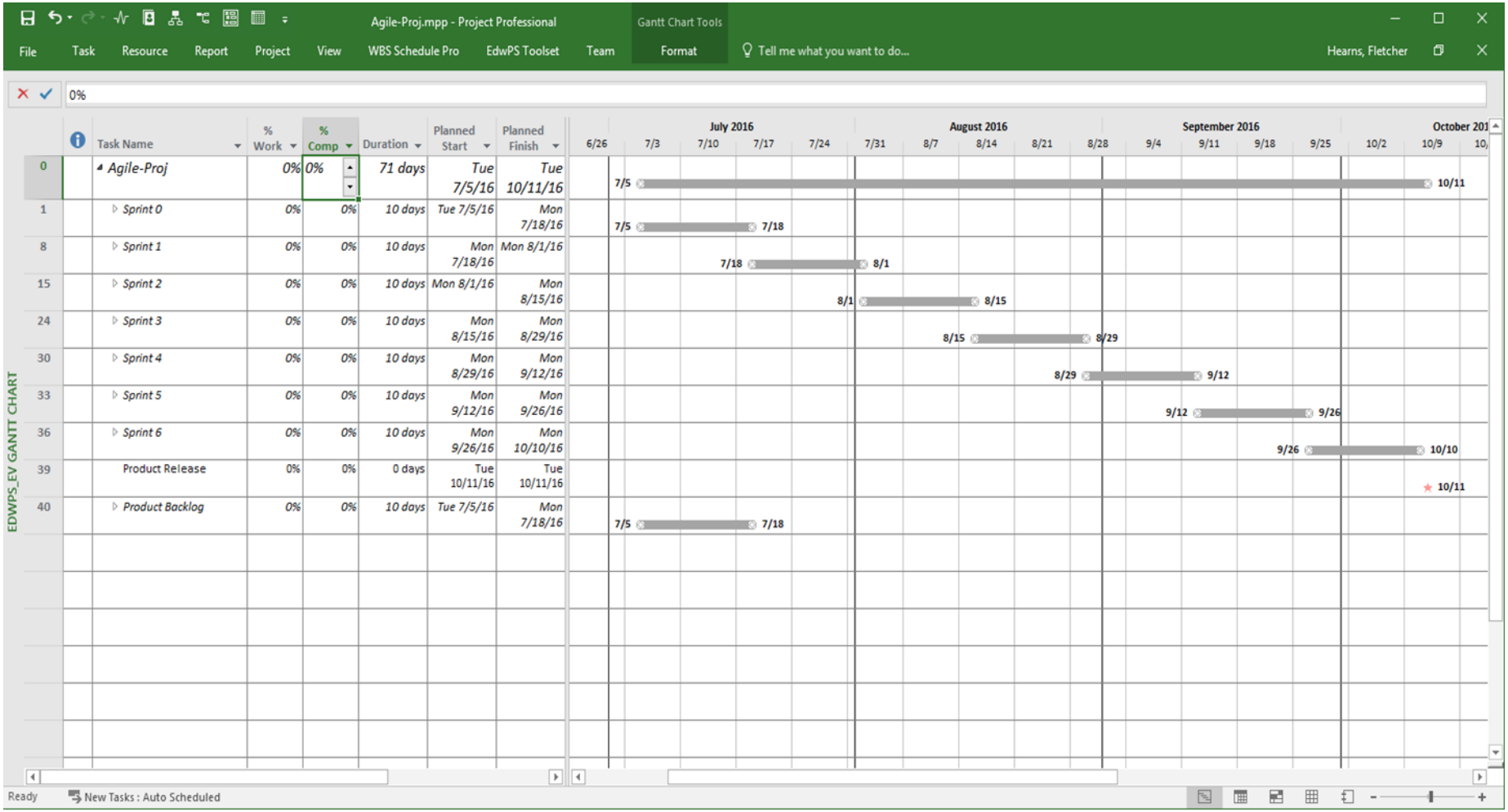
EVM in and Agile World – The Setup

- Establish a Schedule Baseline
  - For known Iterations
  - For know work assigned to iterations
- Establish a Non-Baselined list of Work (Stories)
  - Product Backlog – will change over time.
    - If Story Point budgeting used – must be held constant
- Part of Iteration Planning is establishing baseline for Iteration
  - What Stories (Requirements) are going to be worked on
- Part of Iteration Retrospective what work was completed
  - EVM measurement you only get credit for Complete/Accepted work

EVM in and Agile World – The Tools

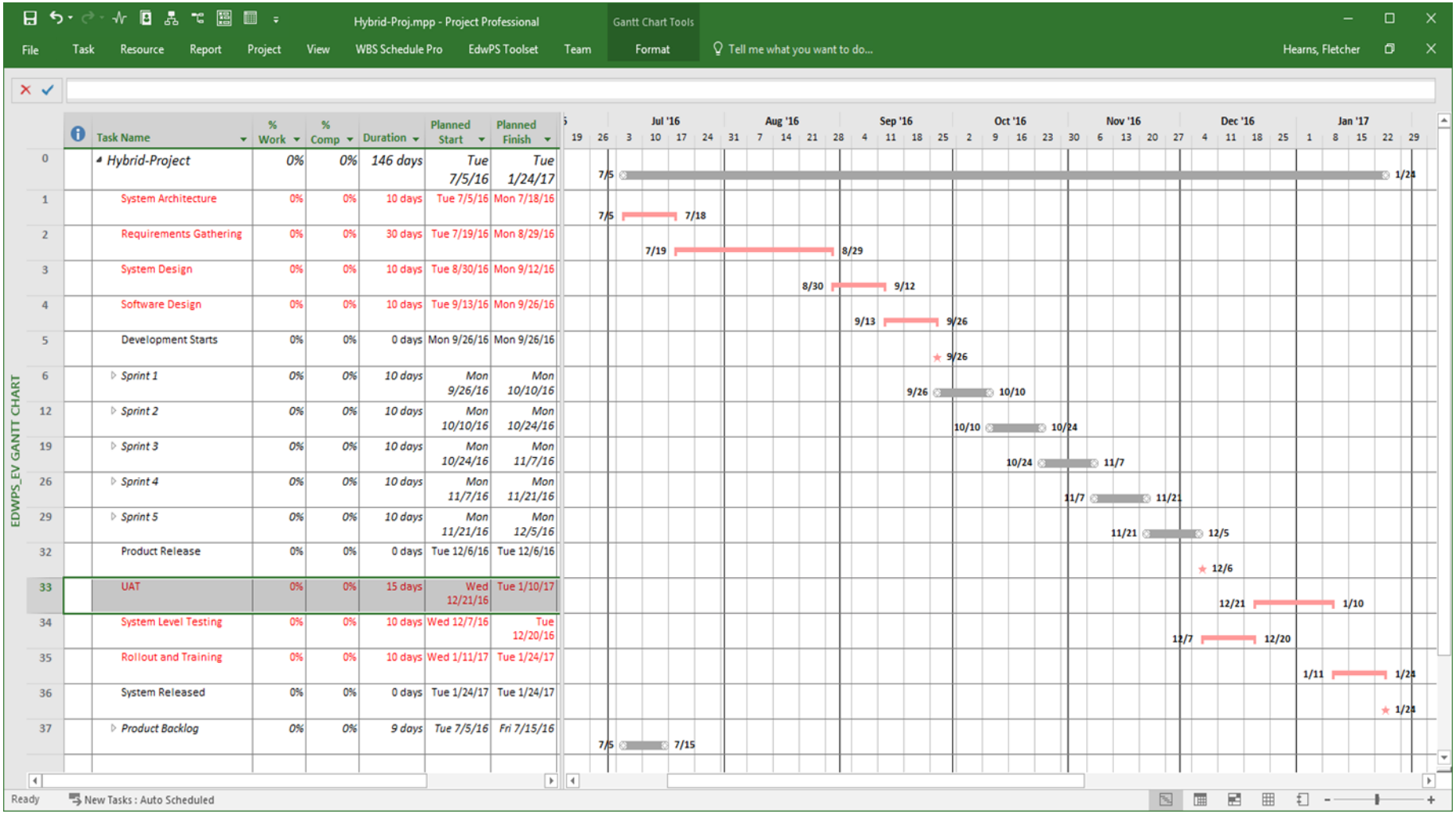
- Agile Development Tools
  - Sticky Notes and White Boards – Old school
  - Jira, Version One, Rally – Automated Tools
  - *Good at Agile Stuff – not a great scheduling tools*
- Project Management Tools
  - Microsoft Project
  - Primavera P6
  - Open Plan
  - *Good Scheduling tools with EVM reporting – not great at Agile*
- Use the right tool
  - Move only "required" data from one to the other

Microsoft Project – Agile Tracking



EDWARDS PERFORMANCE SOLUTIONS

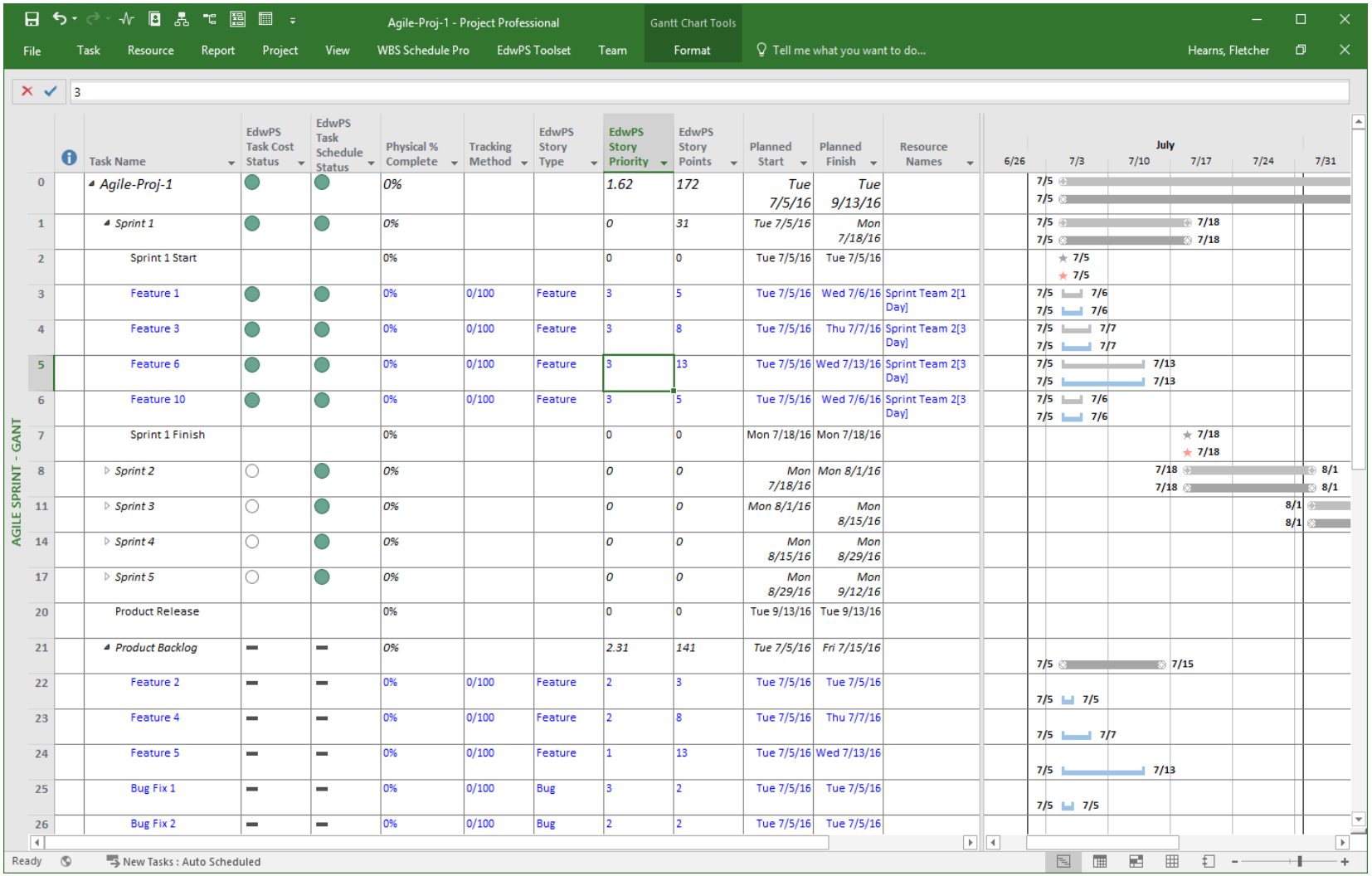
Microsoft Project – Hybrid Tracking



	Task Name	% Work	% Comp	Duration	Planned Start	Planned Finish
0	Hybrid-Project	0%	0%	146 days	Tue 7/5/16	Tue 1/24/17
1	System Architecture	0%	0%	10 days	Tue 7/5/16	Mon 7/18/16
2	Requirements Gathering	0%	0%	30 days	Tue 7/19/16	Mon 8/29/16
3	System Design	0%	0%	10 days	Tue 8/30/16	Mon 9/12/16
4	Software Design	0%	0%	10 days	Tue 9/13/16	Mon 9/26/16
5	Development Starts	0%	0%	0 days	Mon 9/26/16	Mon 9/26/16
6	Sprint 1	0%	0%	10 days	Mon 9/26/16	Mon 10/10/16
12	Sprint 2	0%	0%	10 days	Mon 10/10/16	Mon 10/24/16
19	Sprint 3	0%	0%	10 days	Mon 10/24/16	Mon 11/7/16
26	Sprint 4	0%	0%	10 days	Mon 11/7/16	Mon 11/21/16
29	Sprint 5	0%	0%	10 days	Mon 11/21/16	Mon 12/5/16
32	Product Release	0%	0%	0 days	Tue 12/6/16	Tue 12/6/16
33	UAT	0%	0%	15 days	Wed 12/21/16	Tue 1/10/17
34	System Level Testing	0%	0%	10 days	Wed 12/7/16	Tue 12/20/16
35	Rollout and Training	0%	0%	10 days	Wed 1/11/17	Tue 1/24/17
36	System Released	0%	0%	0 days	Tue 1/24/17	Tue 1/24/17
37	Product Backlog	0%	0%	9 days	Tue 7/5/16	Fri 7/15/16

EDWARDS PERFORMANCE SOLUTIONS

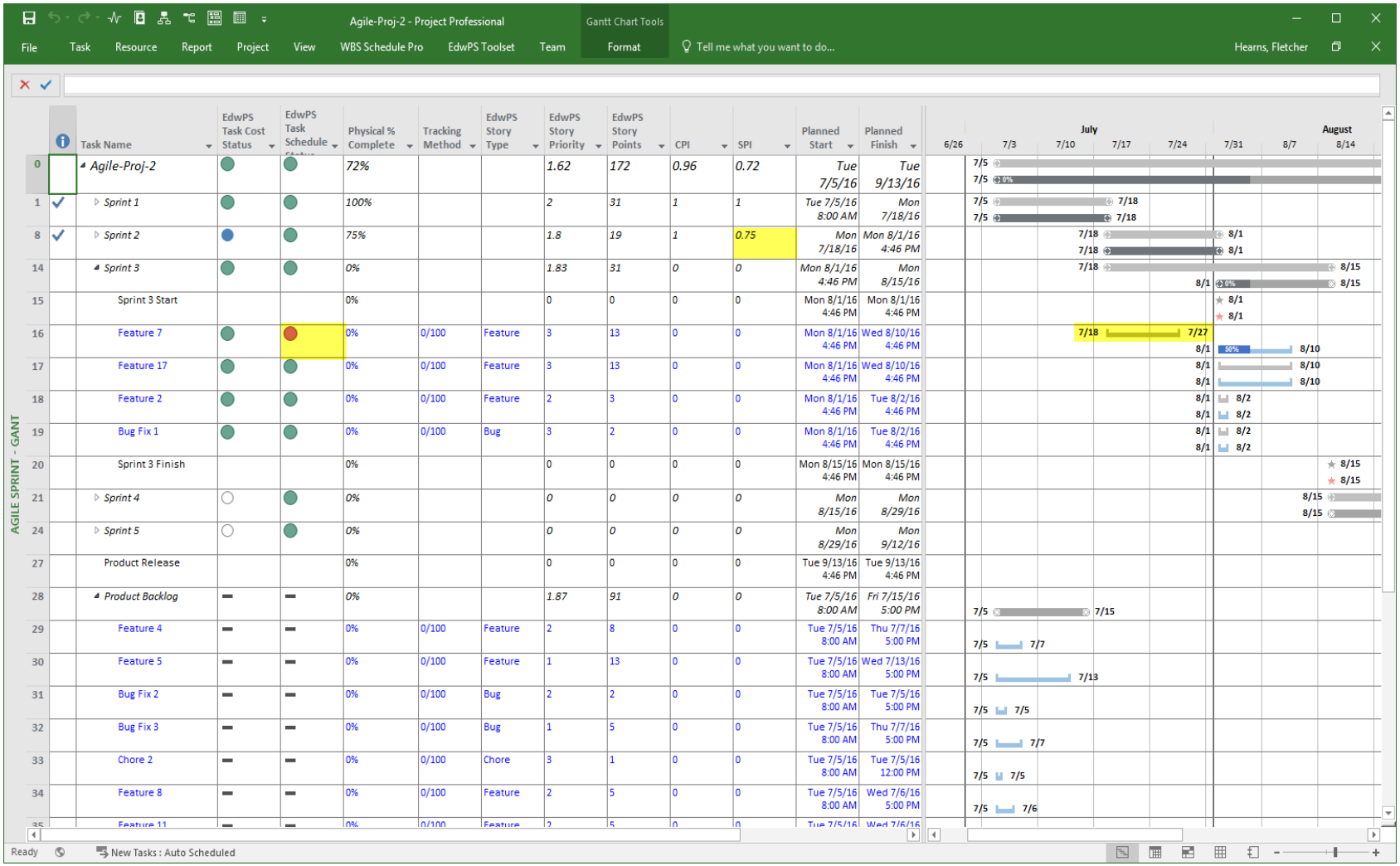
Agile Iteration Setup



	Task Name	EdwPS Task Cost Status	EdwPS Task Schedule Status	Physical % Complete	Tracking Method	EdwPS Story Type	EdwPS Story Priority	EdwPS Story Points	Planned Start	Planned Finish	Resource Names
0	*Agile-Proj-1*			*0%*			*1.62*	*172*	*Tue 7/5/16*	*Tue 9/13/16*	
1	*Sprint 1*			*0%*			*0*	*31*	*Tue 7/5/16*	*Mon 7/18/16*	
2	Sprint 1 Start			0%			0	0	Tue 7/5/16	Tue 7/5/16	
3	Feature 1			0%	0/100	Feature	3	5	Tue 7/5/16	Wed 7/6/16	Sprint Team 2[1 Day]
4	Feature 3			0%	0/100	Feature	3	8	Tue 7/5/16	Thu 7/7/16	Sprint Team 2[3 Day]
5	Feature 6			0%	0/100	Feature	3	13	Tue 7/5/16	Wed 7/13/16	Sprint Team 2[3 Day]
6	Feature 10			0%	0/100	Feature	3	5	Tue 7/5/16	Wed 7/6/16	Sprint Team 2[3 Day]
7	Sprint 1 Finish			0%			0	0	Mon 7/18/16	Mon 7/18/16	
8	*Sprint 2*			*0%*			*0*	*0*	*Mon 7/18/16*	*Mon 8/1/16*	
11	*Sprint 3*			*0%*			*0*	*0*	*Mon 8/1/16*	*Mon 8/15/16*	
14	*Sprint 4*			*0%*			*0*	*0*	*Mon 8/15/16*	*Mon 8/29/16*	
17	*Sprint 5*			*0%*			*0*	*0*	*Mon 8/29/16*	*Mon 9/12/16*	
20	Product Release			0%			0	0	Tue 9/13/16	Tue 9/13/16	
21	*Product Backlog*			*0%*			*2.31*	*141*	*Tue 7/5/16*	*Fri 7/15/16*	
22	Feature 2			0%	0/100	Feature	2	3	Tue 7/5/16	Tue 7/5/16	
23	Feature 4			0%	0/100	Feature	2	8	Tue 7/5/16	Thu 7/7/16	
24	Feature 5			0%	0/100	Feature	1	13	Tue 7/5/16	Wed 7/13/16	
25	Bug Fix 1			0%	0/100	Bug	3	2	Tue 7/5/16	Tue 7/5/16	
26	Bug Fix 2			0%	0/100	Bug	2	2	Tue 7/5/16	Tue 7/5/16	

EDWARDS PERFORMANCE SOLUTIONS

Agile Iteration Closeout – Work Remaining



	Task Name	EdwPS Task Cost Status	EdwPS Task Schedule	Physical % Complete	Tracking Method	EdwPS Story Type	EdwPS Story Priority	EdwPS Story Points	CPI	SPI	Planned Start	Planned Finish
0	*Agile-Proj-2*			*72%*			*1.62*	*172*	*0.96*	*0.72*	*Tue 7/5/16*	*Tue 9/13/16*
1	*Sprint 1*			*100%*			*2*	*31*	*1*	*1*	*Tue 7/5/16 8:00 AM*	*Mon 7/18/16*
8	*Sprint 2*			*75%*			*1.8*	*19*	*1*	*0.75*	*Mon 7/18/16*	*Mon 8/1/16 4:46 PM*
14	*Sprint 3*			*0%*			*1.83*	*31*	*0*	*0*	*Mon 8/1/16 4:46 PM*	*Mon 8/15/16*
15	Sprint 3 Start			0%			0	0	0	0	Mon 8/1/16 4:46 PM	Mon 8/1/16 4:46 PM
16	Feature 7			0%	0/100	Feature	3	13	0	0	Mon 8/1/16 4:46 PM	Wed 8/10/16 4:46 PM
17	Feature 17			0%	0/100	Feature	3	13	0	0	Mon 8/1/16 4:46 PM	Wed 8/10/16 4:46 PM
18	Feature 2			0%	0/100	Feature	2	3	0	0	Mon 8/1/16 4:46 PM	Tue 8/2/16 4:46 PM
19	Bug Fix 1			0%	0/100	Bug	3	2	0	0	Mon 8/1/16 4:46 PM	Tue 8/2/16 4:46 PM
20	Sprint 3 Finish			0%			0	0	0	0	Mon 8/15/16 4:46 PM	Mon 8/15/16 4:46 PM
21	*Sprint 4*			*0%*			*0*	*0*	*0*	*0*	*Mon 8/15/16*	*Mon 8/29/16*
24	*Sprint 5*			*0%*			*0*	*0*	*0*	*0*	*Mon 8/29/16*	*Mon 9/12/16*
27	Product Release			0%			0	0	0	0	Tue 9/13/16 4:46 PM	Tue 9/13/16 4:46 PM
28	*Product Backlog*			*0%*			*1.87*	*91*	*0*	*0*	*Tue 7/5/16 8:00 AM*	*Fri 7/15/16 5:00 PM*
29	Feature 4			0%	0/100	Feature	2	8	0	0	Tue 7/5/16 8:00 AM	Thu 7/7/16 5:00 PM
30	Feature 5			0%	0/100	Feature	1	13	0	0	Tue 7/5/16 8:00 AM	Wed 7/13/16 5:00 PM
31	Bug Fix 2			0%	0/100	Bug	2	2	0	0	Tue 7/5/16 8:00 AM	Tue 7/5/16 5:00 PM
32	Bug Fix 3			0%	0/100	Bug	1	5	0	0	Tue 7/5/16 8:00 AM	Thu 7/7/16 5:00 PM
33	Chore 2			0%	0/100	Chore	3	1	0	0	Tue 7/5/16 8:00 AM	Tue 7/5/16 12:00 PM
34	Feature 8			0%	0/100	Feature	2	5	0	0	Tue 7/5/16 8:00 AM	Wed 7/6/16 5:00 PM

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EVM in and Agile World

- Requires On-Going Schedule / Backlog maintenance
- Baseline is first set for all iteration (Time)
- Baseline is updated (added to) as part of Sprint Planning
  - Added known work to existing baseline
- Track Actual Cost for all Completed work within Iteration
  - Use EVM 0/100 methodology for all
  - EVM measurement you only get credit for Complete/Accepted work
    - Just like Agile velocity calculation
- All uncompleted work returns to “Backlog” to be re-planned
  - Do NOT remove from baseline (work has actually started)

EVM – Desktop Reference

Earned Value Management
Desktop Reference

Project Performance Measurement and Metrics

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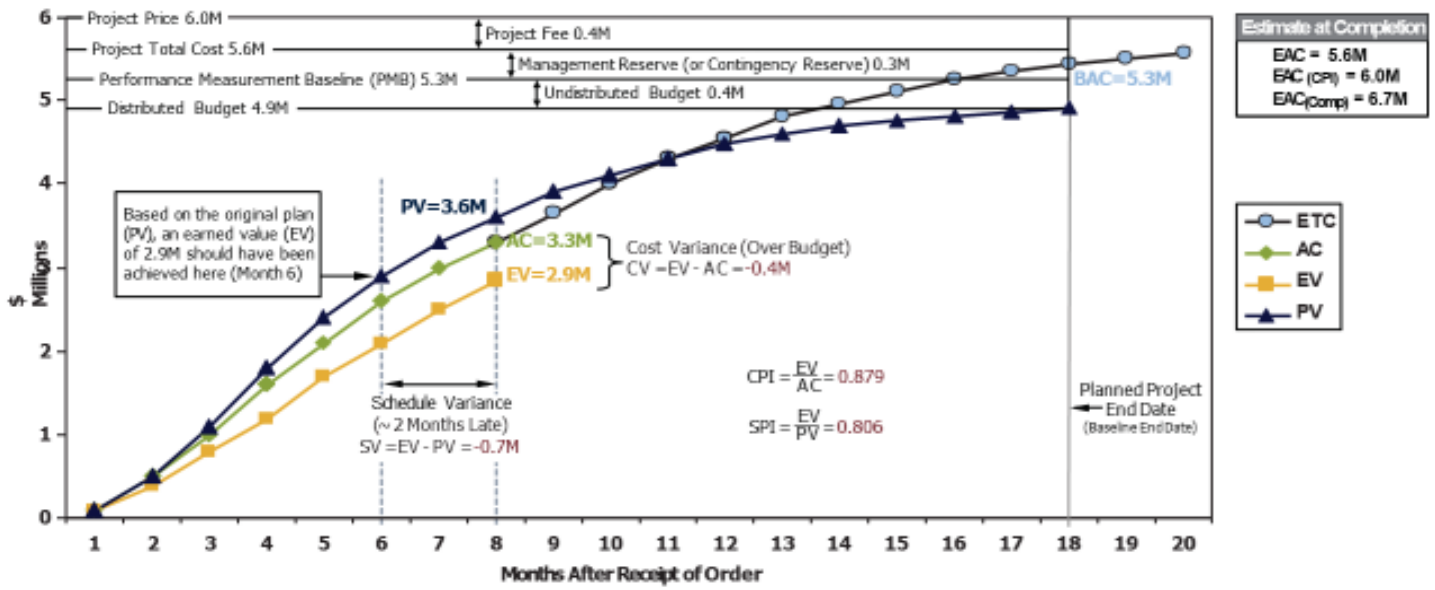

Earned Value Components:

PV: Planned Value (-or- BCWS: Budgeted Cost for Work Scheduled)	The cumulative, time-phased, planned cost to execute the project from the project start date through the status date.
AC: Actual Cost (-or- ACWP: Actual Cost for Work Performed)	The cumulative actual cost of all work performed on the project from the project start through the status date.
EV: Earned Value (-or- BCWP: Budgeted Cost for Work Performed)	The cumulative amount of value earned is the sum of budgeted values for all completed work on a project.
EAC: Estimate At Completion	Cumulative actual costs (AC) incurred plus the estimate to complete (ETC) of all remaining authorized work on a project.
BAC: Budget At Completion	The planned (estimated) total cost to complete the entire project, excluding Contingency Reserve and Project Fee.
ETC: Estimate To Complete	The a time-phased cost estimate of resources needed to complete the remaining authorized work on a project.

Side 1

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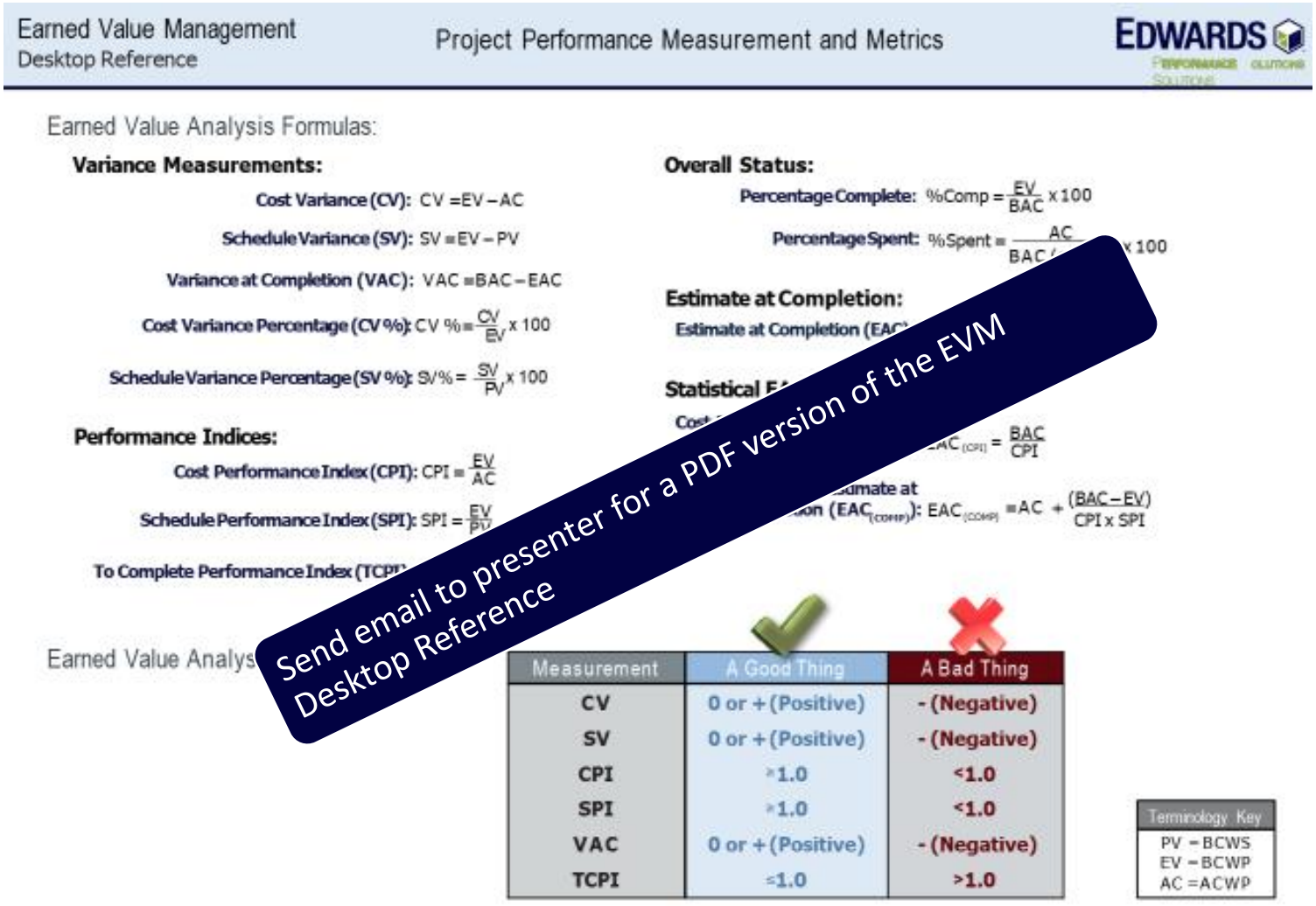
EVM – Desktop Reference



Earned Value Management
Desktop Reference

Project Performance Measurement and Metrics

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Earned Value Analysis Formulas:

Variance Measurements:

Cost Variance (CV): $CV = EV - AC$

Schedule Variance (SV): $SV = EV - PV$

Variance at Completion (VAC): $VAC = BAC - EAC$

Cost Variance Percentage (CV %): $CV\% = \frac{CV}{EV} \times 100$

Schedule Variance Percentage (SV %): $SV\% = \frac{SV}{PV} \times 100$

Performance Indices:

Cost Performance Index (CPI): $CPI = \frac{EV}{AC}$

Schedule Performance Index (SPI): $SPI = \frac{EV}{PV}$

To Complete Performance Index (TCPI)

Overall Status:

Percentage Complete: $\%Comp = \frac{EV}{BAC} \times 100$

Percentage Spent: $\%Spent = \frac{AC}{BAC} \times 100$

Estimate at Completion:

Estimate at Completion (EAC)

Statistical E

Cost

$EAC_{(CPI)} = \frac{BAC}{CPI}$

umate at

on ($EAC_{(COMP)}$): $EAC_{(COMP)} = AC + \frac{(BAC - EV)}{CPI \times SPI}$

Earned Value Analys

Send email to presenter for a PDF version of the EVM Desktop Reference

Measurement	A Good Thing	A Bad Thing
CV	0 or + (Positive)	- (Negative)
SV	0 or + (Positive)	- (Negative)
CPI	>1.0	<1.0
SPI	>1.0	<1.0
VAC	0 or + (Positive)	- (Negative)
TCPI	≤1.0	>1.0

Terminology Key

PV = BCWS
EV = BCWP
AC = ACWP

Side 2

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Questions?

To learn more about the topic of this presentation, please contact…

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