Project Controls Expo – 16th Nov 2016
Emirates Stadium, London

Project Portfolio Management & Coding

About the Speaker Mike Younger

A Chartered Engineer, with a degree in Mechanical Engineering

I live in Surrey

Two years ago I spoke at this Expo on using EVM to better forecast outcomes

I have 37 years experience in Oil and Gas contracting side

Recently joined T&T and now working in other areas outside of Oil and Gas.

About the Topic

- We all take it for granted that every real project needs a schedule
- The next great challenge to realise all of out projects are linked so should be in one combined portfolio schedule
- This presentation is to explain why and how to set up a Portfolio schedule

Agenda

- **Portfolio Management**
  - Portfolio features & benefits
  - Gate Controls
  - Lead and lag indicators
  - How to put them into your plan and use them
  - Portfolio summary
- **Introduction to coding**
  - Codes and the levels to pitch them at
  - Control accounts
  - Ownership & Maintenance
  - Other codes
  - Coding Summary
- **Overall Summary**

Questions?

Portfolio Management

PMI definition:

"Portfolio management is the centralised management of one or more programmes, which includes identifying, prioritising, authorising, managing, and controlling projects and other related work to achieve specific strategic business objectives".

Which basically means, putting all your project schedules together rather than siloing them, so you can review the effect of them on each other and use this to sanction and resource them.

Portfolio Features & Benefits

- Ability to see all prospects & projects combined and their effects on each other
- Ability to select and prioritise the right Projects through Gateways
- Better Resource planning
- Improved reporting
- Benchmarking

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Gate Control

- Projects should not start until they are approved in terms of;
  - Cost
  - Schedule
  - Resources
  - Someone has read the instructions
- Seems obvious but the IKEA principle nearly always takes over
- The Gate should only be opened when everything is ready for each phase
- Having a portfolio helps in Gate Control scheduling.
- Gates are only a delay if they are not planned for in the beginning.

Examples of Portfolio Indicators to be used

Lead (future) indicators

Are we ready to go

- Is the price right and can we afford it?
- Is the schedule correct and achievable?
- Are there resources in place to do this?

Lag (past) indicators

How are we doing so far?

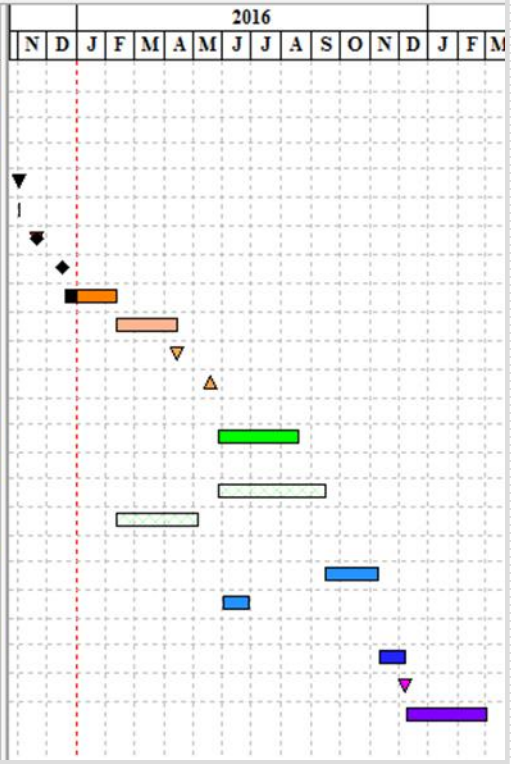
- Earned Vale Management EVM
  - CPI & SPI – Earned value versus actual and plan
  - TCPI & TSPI– the required CPI and SPI to finish on time and budget and, how does it compare to that to date
- Average rates

How to put them into a portfolio plan

Each Project, prospect or overhead, is initially a few activities in your portfolio, e.g. one for each phase, linked where applicable with other projects.

Layout: KS 2016 - PROGRESS with baseline | Filter All: Hide Project Costs Bar

Activity ID	Activity Name	Start	Finish	Sanction Y/N	BTC	FCC	ATC	RTC
		02-Nov-15 A	02-Mar-17		£500,000	£500,000	£6,000	£494,000
		02-Nov-15 A	02-Mar-17		£500,000	£500,000	£6,000	£494,000
		02-Nov-15 A	02-Mar-17		£500,000	£500,000	£6,000	£494,000
Pre-Sanction		02-Nov-15 A	19-May-16		£50,000	£50,000	£6,000	£44,000
0010	Opportunity Identification	02-Nov-15 A		S	£0	£0	£0	£0
0011	**UNDER REVIEW FOR STAGED APPROACH-JUN S		02-Nov-15 A	S	£0	£0	£0	£0
0110	Pre-Sanction - PAS		20-Nov-15 A	S	£0	£0	£0	£0
0120	Approve Pre-Sanction - SAP		18-Dec-15 A	S	£0	£0	£0	£0
0200	Pre-Sanction Concept Design	21-Dec-15 A	11-Feb-16	S	£20,000	£20,000	£6,000	£14,000
0300	Pre-Sanction Feed Design	12-Feb-16	14-Apr-16	S	£30,000	£30,000	£0	£30,000
0310	Full-Sanction - PAS		15-Apr-16*	U	£0	£0	£0	£0
0320	Approve Full-Sanction - SAP		19-May-16	U	£0	£0	£0	£0
Design		27-May-16	18-Aug-16		£50,000	£50,000	£0	£50,000
3000	Engineering Design	27-May-16	18-Aug-16	U	£50,000	£50,000	£0	£50,000
Procurement		12-Feb-16	15-Sep-16		£245,000	£245,000	£0	£245,000
4000	Equipment Procurement (Ph.2 - 4 months Emerson)	27-May-16	15-Sep-16	U	£125,000	£125,000	£0	£125,000
4010	Equipment Procurement (Ph.1 - Instruments)	12-Feb-16	05-May-16	U	£120,000	£120,000	£0	£120,000
Construction		01-Jun-16	10-Nov-16		£130,000	£130,000	£0	£130,000
6000	Construction (Ph.2 - Install HIMA)	16-Sep-16	10-Nov-16	U	£80,000	£80,000	£0	£80,000
6010	Construction (Ph.1 - Install Instruments)	01-Jun-16*	28-Jun-16	U	£50,000	£50,000	£0	£50,000
Commissioning		11-Nov-16	02-Mar-17		£25,000	£25,000	£0	£25,000
7000	Commissioning	11-Nov-16	08-Dec-16	U	£20,000	£20,000	£0	£20,000
7010	Beneficial Operation		08-Dec-16	U	£0	£0	£0	£0
7020	Project Close Out	09-Dec-16	02-Mar-17	U	£5,000	£5,000	£0	£5,000



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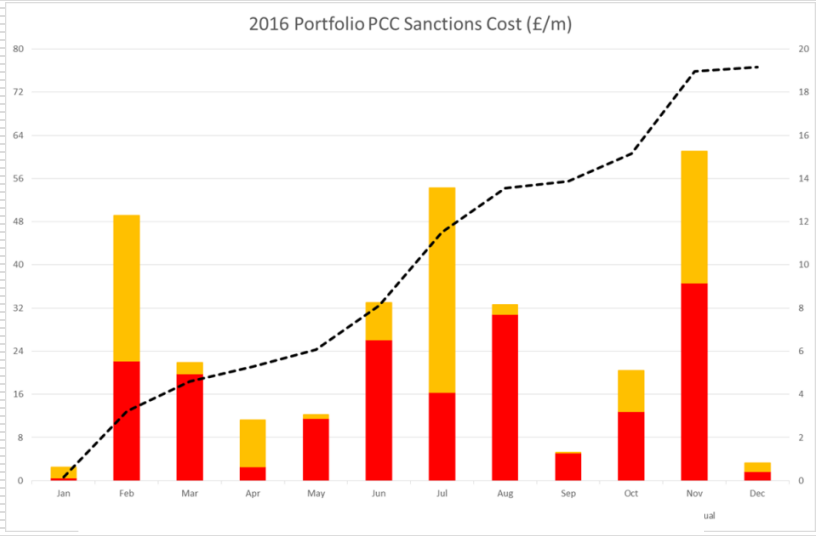
How to put them into a portfolio plan

- Nearer the start time;
  - An interactive planning session is held and a more detailed plan agreed
  - Compared to the initial estimate and duration and deltas explained and agreed
  - The new detailed schedule is “dropped in” to see the overall effect
- Post award it is forecasted on a regular basis.
- Continual review of each project’s critical path and the new added dimension of an overall critical path.

How to use the Portfolio

- Look for resource problems and move projects if you can
- Look at funding levels, is this possible, if not react?



- Schedule the next Gate meetings
- Use 30 and 90 day lookaheads to remove surprises and agree priorities.

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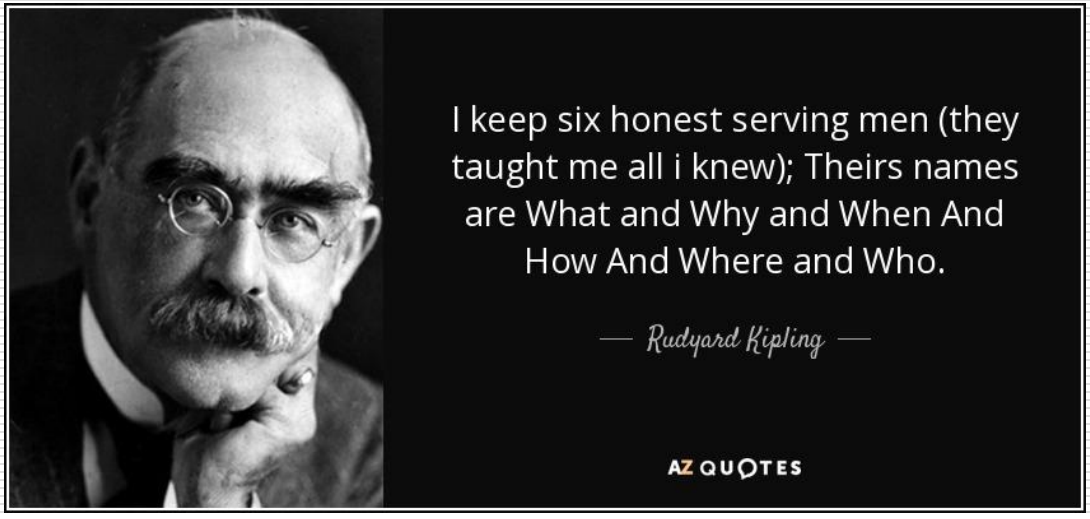
Portfolio Summary

Portfolio's mean:

- **Programmes & therefore projects are linked**
- **Projects can be reported alone or as a whole portfolio**
- **Projects can be compared, contrasted & benchmarked**
- **Projects can be to progress via planned gate reviews**
- **The use of common processes & staff mobility**

But all of this needs to be held together and consistent coding and breakdown structures is the key to this …..

Coding



So how can we in project controls use these 6 honest men and not be stuck in conventional, how much and when mode?

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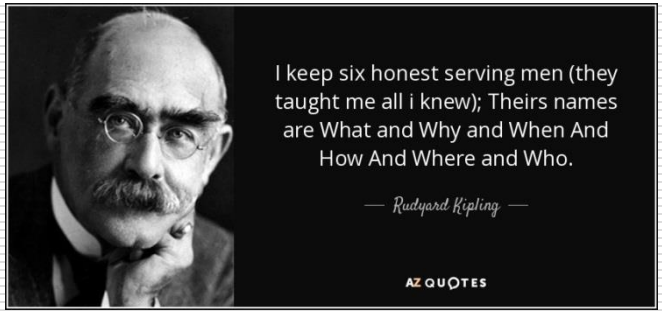
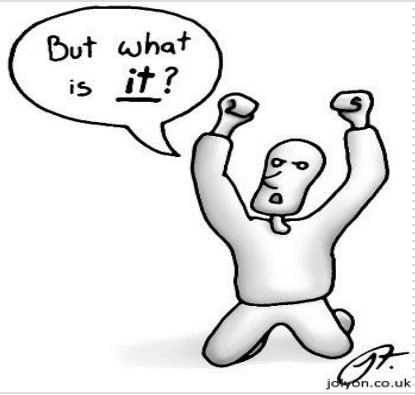
Introduction to Coding



- What? - The Cost Breakdown Structure
- Why? - The business case
- When? - The Schedule
- How? - The procedures and execution plan
- Where? -The Work Breakdown Structure
- Who? - The Organisational Breakdown Structure or RAM

If we can know all of these 6 we know everything about anything on our projects and Portfolio

The CBS – What?



- It tells you what it is and is usually generated by the account system and common across all projects inside an organisation
- It tells us what is part of the final asset register?
- It allows us to use Estimating data from other projects for the same items
- It tells us how to earn value for it, against rules of credit.

The Schedule – When?

- It tells us when things are due and what we need to do next
- Allows us to plan the resources we need
- Helps generates the cashflow and planned EV to give the PV curves

"If you fail to plan, you are planning to fail!"
– Benjamin Franklin

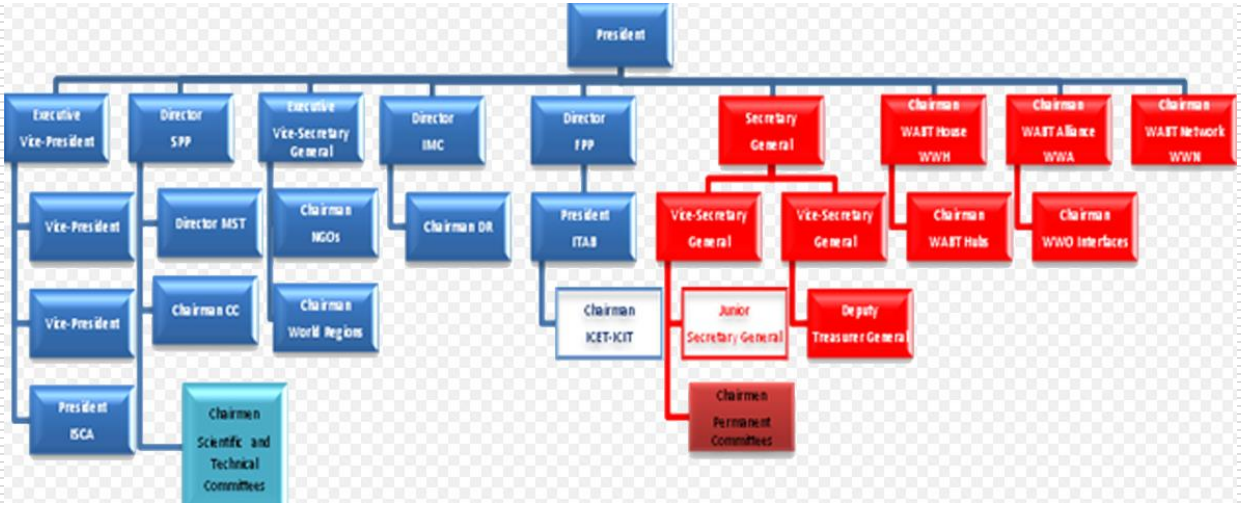
The WBS – Where?

Where? - The Work Breakdown Structure code is important because;

- We need this to know where the item in question is going?
- This is project Specific, but commonality makes benchmarking easier
- Do not be afraid to start general and expand as you go.

The OBS – Who?

- We need to know who is responsible for each part of the project
- It assists in the set up of the contracting strategy and linked to the Procurement system for performance information.
- Added to this is can be another Who, which is the Responsibility assignment Matrix.



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What level to pitch them at

- Codes do not have to be logical, but traditionally those that are work best
- You do not need to start coding a low level, you can start high and work down as detail emerges
- Be aware - there is a point when the more codes you add, starts to decrease accuracy!

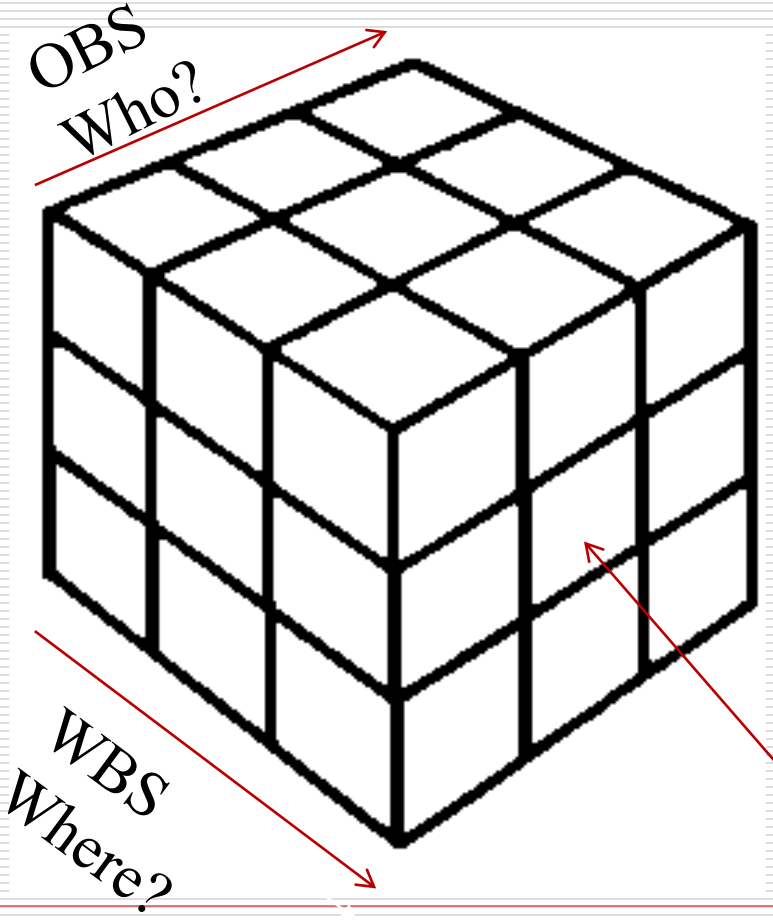
If you create a monster you have to

feed the monster rather than do your job.

So how do we combine them?

- We make sure every single component in the budget has a CBS & WBS to start with
- Their combination is known as a Control Account
- At least one activity in the schedule for every Cost Account.
- Cost and resource load the schedule with the budget and make sure it is viable

Multiple Coding Structures – As a picture



The WBS/CBS Matrix

First create a WBS/CBS Table (Where & what?)

WBS

CBS	Process			Utilities				Buildings				Common	Total
	Feedstock	Treatment	Common	Electrical	Water	Steam	Common	Office	Power Station	Warehouse	Common	Common	
PM													0
Design													0
C Equipment													0
B Bulks													0
S Construction													0
Commissioning													0
Contingency													0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0

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Overlay the budget

Then allocate the estimate into a baseline budget and freeze it

WBS

CBS	Process			Utilities				Buildings				Common	
	Feedstock	Treatment	Common	Electrical	Water	Steam	Common	Office	Power Station	Warehouse	Common	Common	Total
PM	1	1	1	1	1	1	1	2	1	2	1	5	18
Design	1	1		2	1	1	2	2	1	1	1	1	14
Equipment	1	2	1	2	2	2	1	1	1	2	1		16
Bulks		2	2	1	1	1	2	1	2	1	2	2	17
Construction	1	1	2	1		2	1	1	1	1	1	0	12
Commissioning	1	1	1	1	1	1	1	1	1		1	1	11
Contingency	1	1	1	1	1	1	1	1	1	1	1	1	12
Total	6	9	8	9	7	9	9	9	8	8	8	10	100

Black indicates there is no scope for the CBS/ WBS interface

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Develop the contracting Plan

Then contracts are mapped across the work based on an agreed contracting strategy

WBS

CBS	Process			Utilities				Buildings				Common	
	Feedstock	Treatment	Common	Electrical	Water	Steam	Common	Office	Power Station	Warehouse	Common	Common	Total
PM	1	1	1	1	1	1	1	2	1	2	1	5	18
Design	1	1		2	1	1	2	2	1	1	1	1	14
Equipment	1	2	1	2	2	2	1	1	1	2	1		16
Bulks		2	2	1	1	1	2	1	2	1	2	2	17
Construction	1	1	2	1		2	1	1	1	1	1	0	12
Commissioning	1	1	1	1	1	1	1	1	1		1	1	11
Contingency	1	1	1	1	1	1	1	1	1	1	1	1	12
Total	6	9	8	9	7	9	9	9	8	8	8	10	100

This automatically gives you the Budget for each contract (OBS)

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Resilience and consistency

This structure is fully independent of changes in contracting strategy i.e.

- If more than one contractors is needed, use the OBS
- As more detail develops the CBS can be expanded, e.g. bill of quantities
- As more Scope develops you can expand the WBS
- As more granularity is required for control increase the detail levels of the codes

WBS

CBS		Process			Utilities				Buildings				Common	
		Feedstock	Treatment	Common	Electrical	Water	Steam	Common	Office	Power Station	Warehouse	Common	Common	Total
	PM	1	1	1	1	1	1	1	2	1	2	1	5	18
	Design	1	1		2	1	1	2	2	1	1	1	1	14
C	Equipment	1	2	1	2	2	2	1	1	1	2	1		16
B	Bulks		2	2	1	1	1	2	1	2	1	2	2	17
S	Construction	1	1	2	1		2	1	1	1	1	1	0	12
	Commissioning	1	1	1	1	1	1	1	1	1		1	1	11
	Contingency	1	1	1	1	1	1	1	1	1	1	1	1	12
	Total	6	9	8	9	7	9	9	9	8	8	8	10	100

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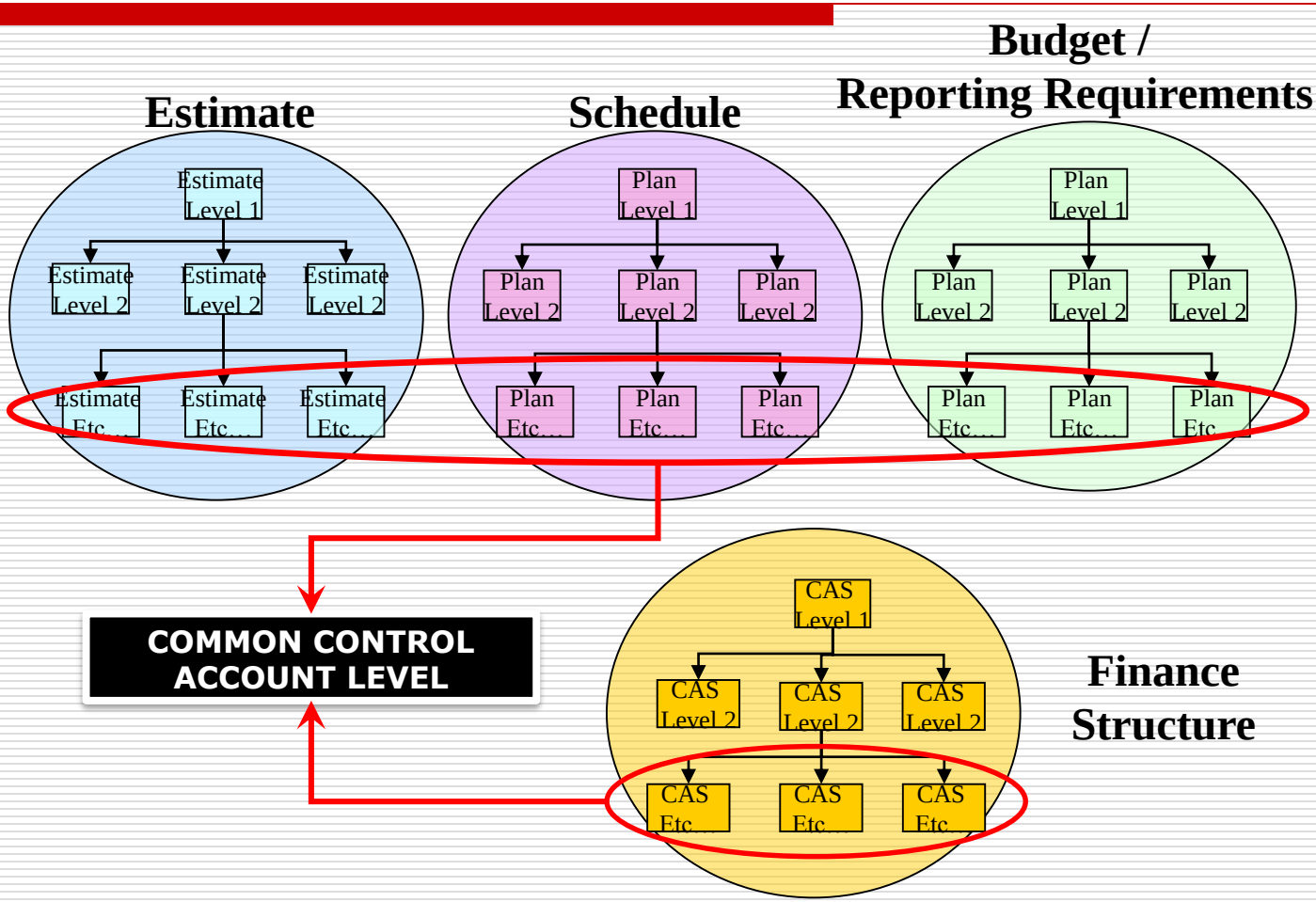
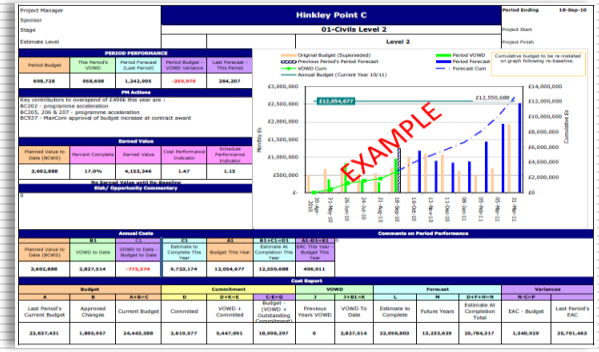
These Control Accounts allow the systems to talk



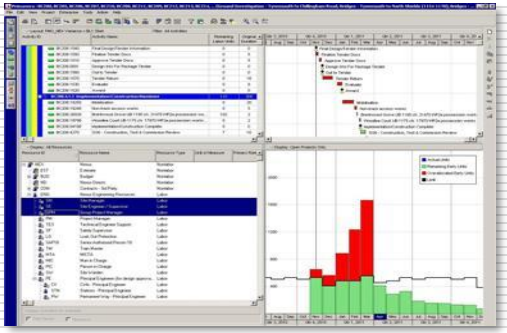
Project Controls EXPO

To give a single source of the truth;

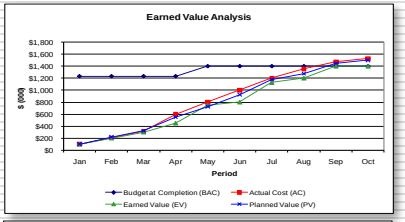
Dashboard

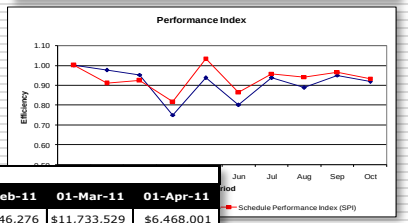


Schedule & Resources



EV Performance





Cost by Period

BURN RATE														
Project Periods	Previous Years	01-Apr-10	01-May-10	01-Jun-10	01-Jul-10	01-Aug-10	01-Sep-10	01-Oct-10	01-Nov-10	01-Dec-10	01-Jan-11	01-Feb-11	01-Mar-11	01-Apr-11
Period Budget	$0	$3,640,551	$1,470,358	$1,772,483	$1,868,780	$1,737,154	$2,188,645	$3,290,261	$3,166,339	$2,684,727	$4,844,260	$2,546,276	$11,733,529	$6,468,001
Period VOWD		$2,450,348	$696,336	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0	$0
Period Forecast				$2,246,220	$2,494,667	$2,483,934	$2,241,190	$1,805,862	$2,197,524	$2,169,952	$5,686,636	$3,316,465	$10,725,063	$6,127,756
Annual Budget (Current Year 10/11)		$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363	$40,943,363
Previous Period's Period Forecast			$1,481,282											
Budge														
VOWD														
Foreca														
Period														

Cost Report

Cost Code	Title	Original Budget (£)	Approved Budget Revisions (£)	Revised Budget (£)	Original Contract Value (£)	Approved Contract Changes (£)	Current Contract Value (£)	ETC / Trend Revisions (£)	Gross Certified Actuals Received (£)	COWD Actuals Issued (£)	Estimate At Completion (£)	Anticipated Final Cost (£)	Projected Variance (£)
301	301 - Thames Area Minor Contracts	0	8,060,000	8,060,000	2,665,000	0	2,665,000	1,859,000	1,611,000	2,206,000	8,060,000	4,524,000	3,536,000
320	320 - Thames Tunnel	6,466,000	-6,466,000	0	0	0	0	0	0	0	0	0	0
330	330 - East Thames (Southern)	114,480,000	-7,545,000	106,935,000	63,331,000	13,974,000	77,305,000	9,969,000	93,510,000	85,618,000	106,935,000	87,274,000	19,661,000
335	335 - Ancient Woodlands	3,180,000	-3,180,000	0	0	0	0	0	0	0	0	0	0
339	339 - Fawkham Junction	0	8,247,000	8,247,000	11,783,000	0	11,783,000	2,181,000	1,869,000	617,000	8,247,000	13,964,000	-5,717,000
340	340 - Ebbsfleet	1,590,000	-1,590,000	0	0	0	0	0	0	0	0	0	0
350	350/410 - Medway Crossing & NDT	24,910,000	89,448,000	114,358,000	106,266,000	14,677,000	120,943,000	138,000	109,061,000	102,083,000	114,358,000	121,081,000	-6,723,000
360	360 - NGC Works (Southern)	3,169,000	9,872,000	13,041,000	14,942,000	0	14,942,000	-1,122,000	14,418,000	13,820,000	13,041,000	13,820,000	-779,000
362	362 - Pepper Hill Utilities	12,874,000	-752,000	12,122,000	12,200,000	0	12,200,000	-1,191,000	11,203,000	11,009,000	12,122,000	11,009,000	1,113,000
370	370 - Archaeology	4,249,000	3,074,000	7,323,000	5,173,000	0	5,173,000	2,433,000	4,602,000	4,918,000	7,323,000	7,606,000	-283,000
390	390 - Landscaping	0	12,737,000	12,737,000	4,017,000	0	4,017,000	1,419,000	1,084,000	1,410,000	12,737,000	5,436,000	7,301,000
401	401 - Kent Area Minor Contracts	0	14,753,000	14,753,000	19,627,000	0	19,627,000	-182,000	13,801,000	16,217,000	14,753,000	19,445,000	-4,692,000
410	410 - North Downs Tunnel with 350	91,300,000	-91,300,000	0	0	0	0	0	0	0	0	0	0
420	420 - Mid Kent	123,390,000	-8,256,000	115,134,000	83,045,000	19,310,000	102,355,000	5,395,000	97,625,000	87,254,000	115,134,000	107,750,000	7,384,000
430	430 - Ashford	202,090,000	-34,332,000	167,758,000	140,989,000	30,033,000	171,022,000	19,291,000	152,889,000	146,151,000	167,758,000	190,313,000	-22,555,000
434	**434 - Railway Infrastructure Mods**	0	55,279,000	55,279,000	56,203,000	-5,661,000	50,542,000	18,975,000	22,286,000	0	55,279,000	69,517,000	-14,238,000
434 A	C434 - Mobilisation & Site Facil.	1,150,000	0	1,150,000	0	0	0	0	0	6,230,384	1,150,000	0	1,150,000

Project Controls EXPO

Ownership and maintenance

- Codes should be common across all systems, contractors and last the duration of the Programme and owned by all.

- Failure to agree the coding early will lead to;
  - Data structures you need not be reflected in tenders or contracts
  - Poor data quality and inconsistency
  - Cost reconciliations

Other Codes to consider

- Project number – for large portfolios and to be able to merge projects for reporting
  - PBS – Phase Breakdown Structure
  - FBS – Funding Breakdown structure
  - CC – Currency Code – only required if your accounts system is no mature enough to hold this
  - SBS – System breakdown code, allows for commissioning to be reported by system rather than by physical location, as such it replaces the WBS, usually late in Construction

Any others specific to your organisation, but remember do not create a monster!

Coding Summary

- ***The coding is never a "one size fits all", it can be used at all levels and moves with maturity:***
  - ***It allows systems to be configured and integrated, i.e. Schedule plus Cost = cashflow***
  - ***It gives consistency of reporting i.e.. "Single source of truth"***
  - ***It gives a framework in order to make sure scope is not forgotten when contracting strategy is overlaid***
  - ***It will lead to better understanding, comparison & benchmarking of projects***

Overall Summary

- **Your Programmes & Projects may be unique but they need to be put together in order to see the whole picture, which means;**
  - **Sometimes it is better not to start something you cannot finish, so you need to know what you can do**
  - **All projects can and should be linked, if only in the resource pool and codes they draw from**
  - **Portfolios lead to greater standardisation that leads to greater staff flexibility**
  - **Portfolios only work if all projects are using the same coding**

Questions