Project Controls Expo – 13th Oct 2015
Emirates Stadium, London

Project Cost Control

About the Speaker

Simon (CH2M)   simon.springate@ch2m.com

☐   20 years looking after London Undergrounds scheduling and project control systems & tools

☐   Time in Qatar (Rail) and South Africa Gold Mines

☐   Today I provide a CH2M European focus for project management and project control skills, standards and tools

☐   In the process I have worked with dozens of PMs, a few good schedulers and a lot of 'developing' clients.

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About the Speaker

Paul (CH2M) Paul.Tucker@ch2m.com

- ☐ Head of Programme Controls on the Tideway tasked with building London's new 'Super Sewer', a £3Bn Programme.

- ☐ Prior was Project Control lead for Lea Tunnel, a £600M programme.

- ☐ Paul developed his key control skills with London Underground and TfL culminating as the deputy to the LU Track Programme Director.

- ☐ Great Control comes from solid systems, a team that understand the whole process and ensuring we develop and learn together

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Cost Control– Cost Management V. Finance

- ☐ Cost Control
    - ■ Mapping the estimate to the schedule
    - ■ Is concerned with the work done against contracts placed
    - ■ Is concerned with approving Invoices for payment
    - ■ Is concerned with ensuring forecast costs remains within project authority
    - ■ Is concerned with ensuring accrued cost stays under funding limit
- ☐ Finance
    - ■ Is concerned with the invoices received against contracts placed
    - ■ Is concerned with ensuring cash call remains within project authority
    - ■ Is concerned with ensuring cash call remains within annual budget
    - ■ Is concerned with converting Invoices to payments

Project Cost Structures

☐ Remember; Project Systems are databases

☐ Before starting to build a structure be clear what you want to achieve

☐ Don't get hung-up on structures

■ Work Break Down Structure (WBS)

■ Cost Break Down Structure (CBS)

■ Product Break Down Structure (PBS)

Project Cost Structures

☐ Do you want to know …?

- ■ What a WBS element cost
- ■ How much design engineers have cost
- ■ How much you are committed to a contract or single supplier
- ■ What funding you will need this year, and each following
- ■ What are the project liabilities
- ■ What is the project going cost compared to the bid
- ■ What the project is going cost including changes and claims

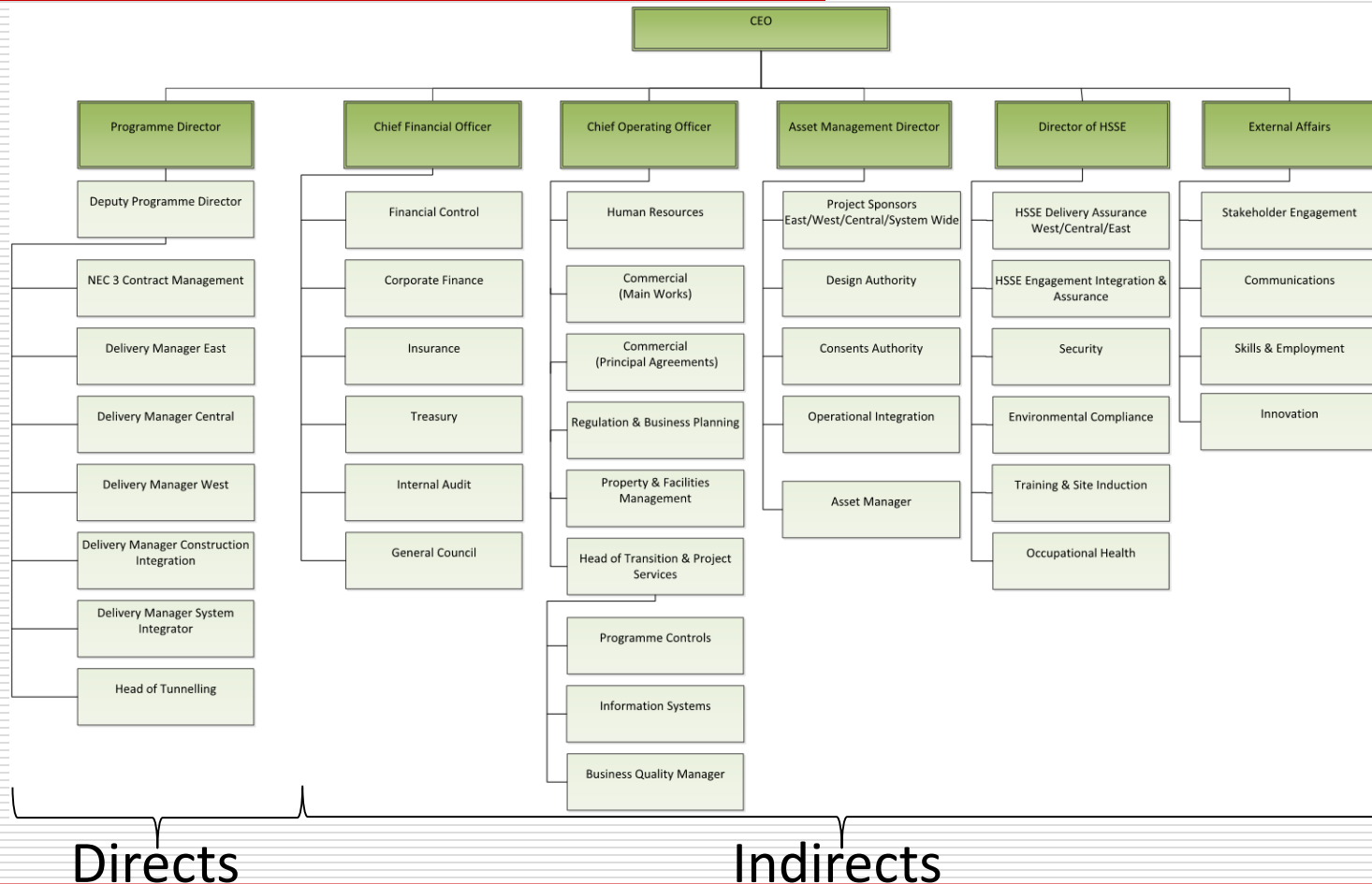Don't duplicate systems, know where information is and use common coding

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What's it all about

3 Numbers

- ☐ Planned Value
- ☐ Actual Cost
- ☐ Forecast

And Cash …

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Cost Control in Tideway

Organisational Structure

CEO

- **Programme Director**
  - Deputy Programme Director
  - NEC 3 Contract Management
  - Delivery Manager East
  - Delivery Manager Central
  - Delivery Manager West
  - Delivery Manager Construction Integration
  - Delivery Manager System Integrator
  - Head of Tunnelling

- **Chief Financial Officer**
  - Financial Control
  - Corporate Finance
  - Insurance
  - Treasury
  - Internal Audit
  - General Council

- **Chief Operating Officer**
  - Human Resources
  - Commercial (Main Works)
  - Commercial (Principal Agreements)
  - Regulation & Business Planning
  - Property & Facilities Management
  - Head of Transition & Project Services
  - Programme Controls
  - Information Systems
  - Business Quality Manager

- **Asset Management Director**
  - Project Sponsors East/West/Central/System Wide
  - Design Authority
  - Consents Authority
  - Operational Integration
  - Asset Manager

- **Director of HSSE**
  - HSSE Delivery Assurance West/Central/East
  - HSSE Engagement Integration & Assurance
  - Security
  - Environmental Compliance
  - Training & Site Induction
  - Occupational Health

- **External Affairs**
  - Stakeholder Engagement
  - Communications
  - Skills & Employment
  - Innovation

Directs   Indirects

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Cost Control in Tideway

Programme Breakdown Structure

Tideway's OBS
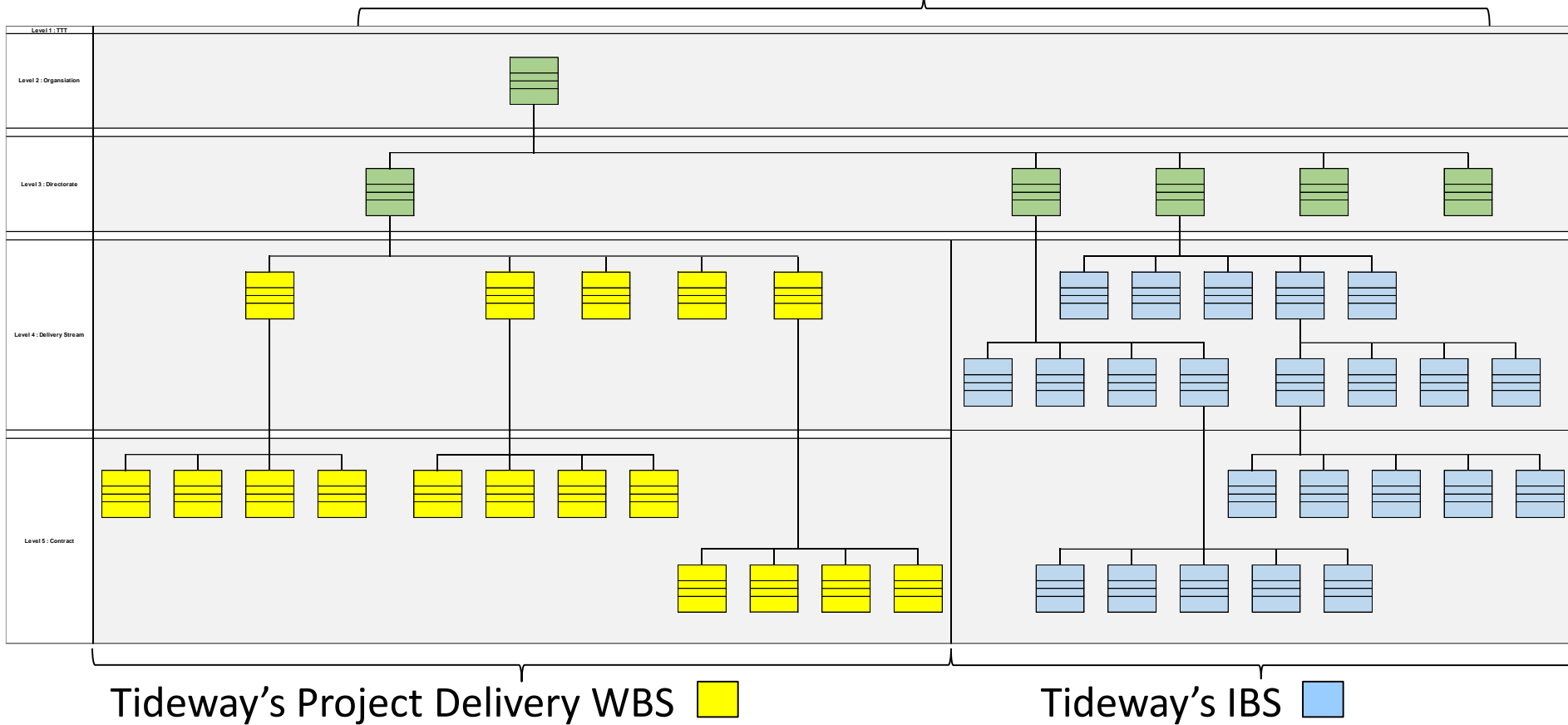
Tideway's Project Delivery WBS

Tideway's IBS

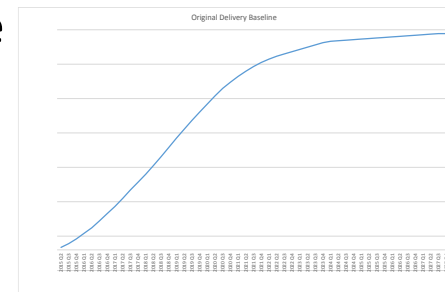# Cost Control in Tideway
Setting the Baseline
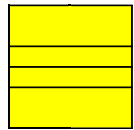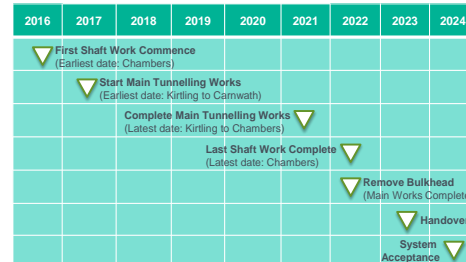
Anchor Milestones

Cost Profile

Cost Plan

Risk Register

Cost Control in Tideway

Cost Terminology

- Regulatory Baseline – defined by the sum of the Annual Base Case Forecasts within the Project License and only updated through the regulatory mechanics detailed within the Project License.

- Delivery Baseline – the Programme's working baseline. Used to track and manage performance against. Proposed changes to this baseline are subject to the governance process and administered via the established change management process.

- Forecast – the Programme's latest view of the profiled out turn cost; comparable to both the Regulatory and Delivery Baselines.

- Current Investment Budget – utilised for Financial Control, this represents the current level of commitment made for expenditure across the Programme.

- Performance – industry standard metrics utilised to track performance against the Delivery Baseline on a cumulative, annual and monthly basis.

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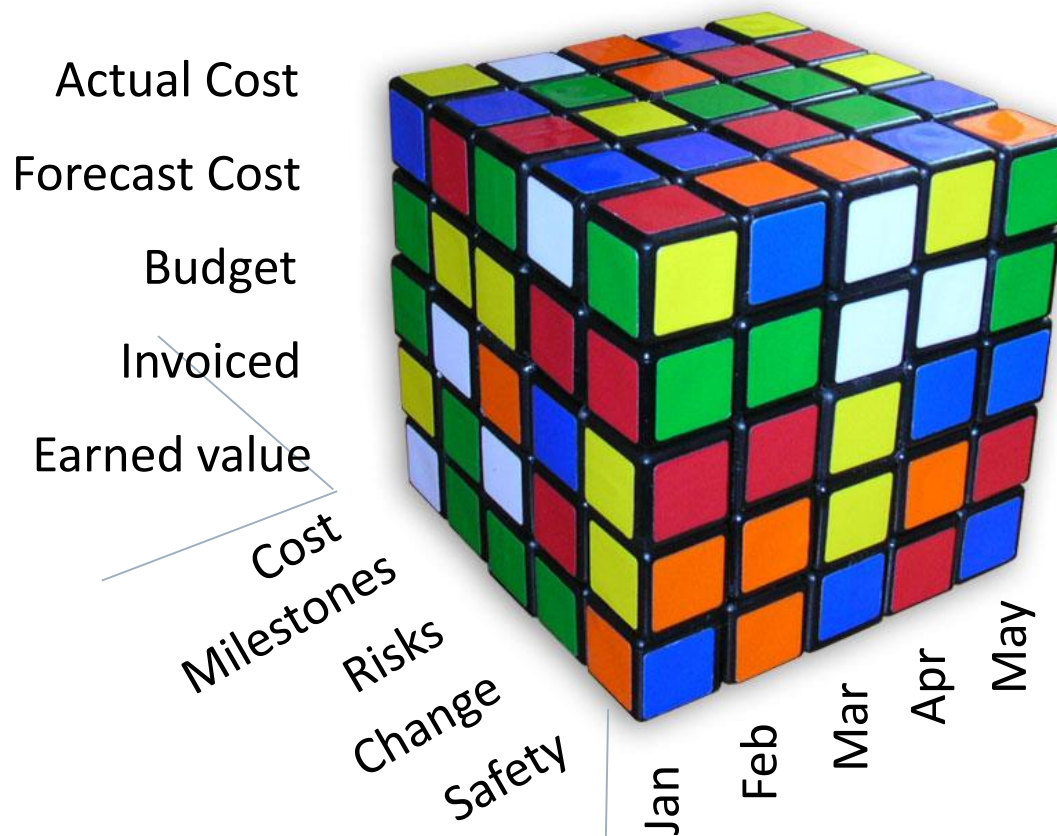
Cost Control in Tideway
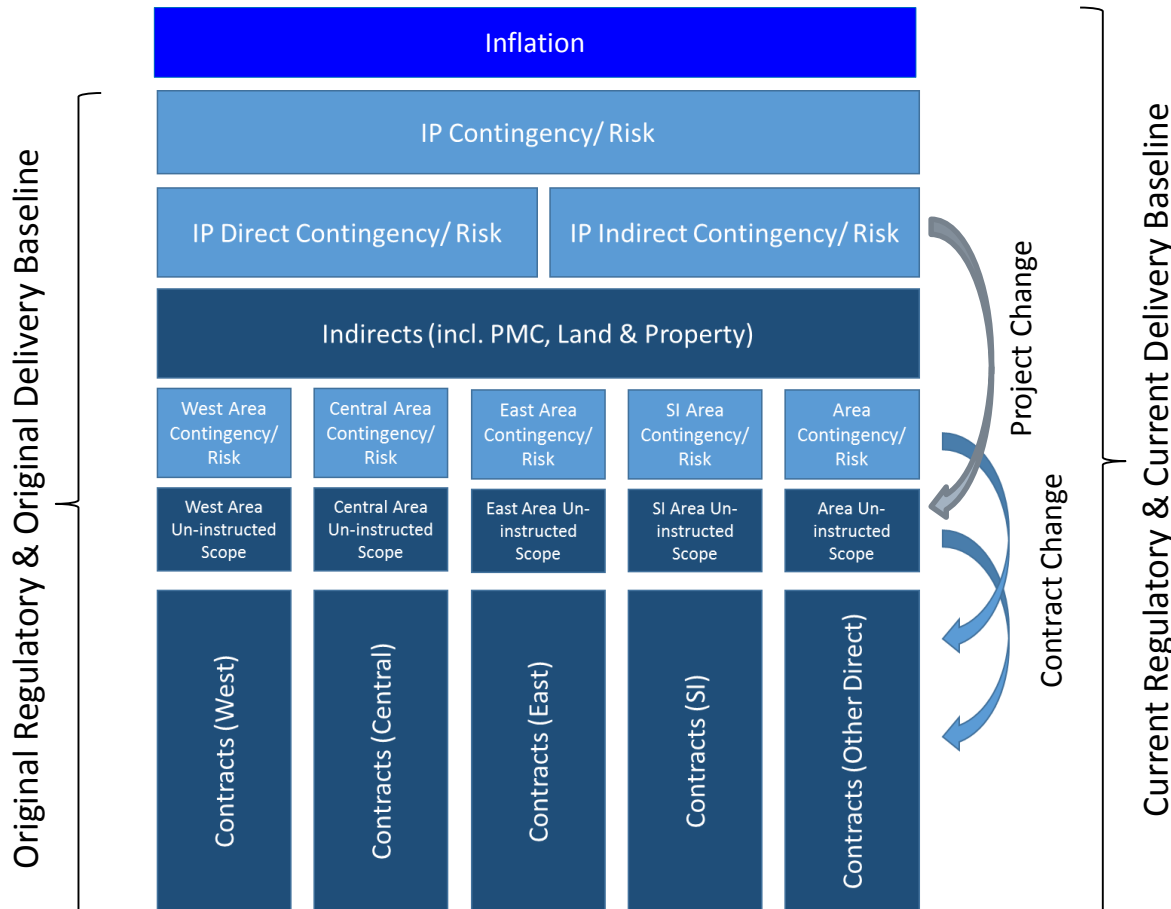
- At the start of the project, the Original Regulatory Baseline, Original Delivery Baseline and Current Forecast are all equal.

- As the project progresses and change events occur, they diverge in accordance with the respective contractual terms;

  - The Project License for the Regulatory Baseline,

  - The NEC3 Contract for the Delivery Baseline.
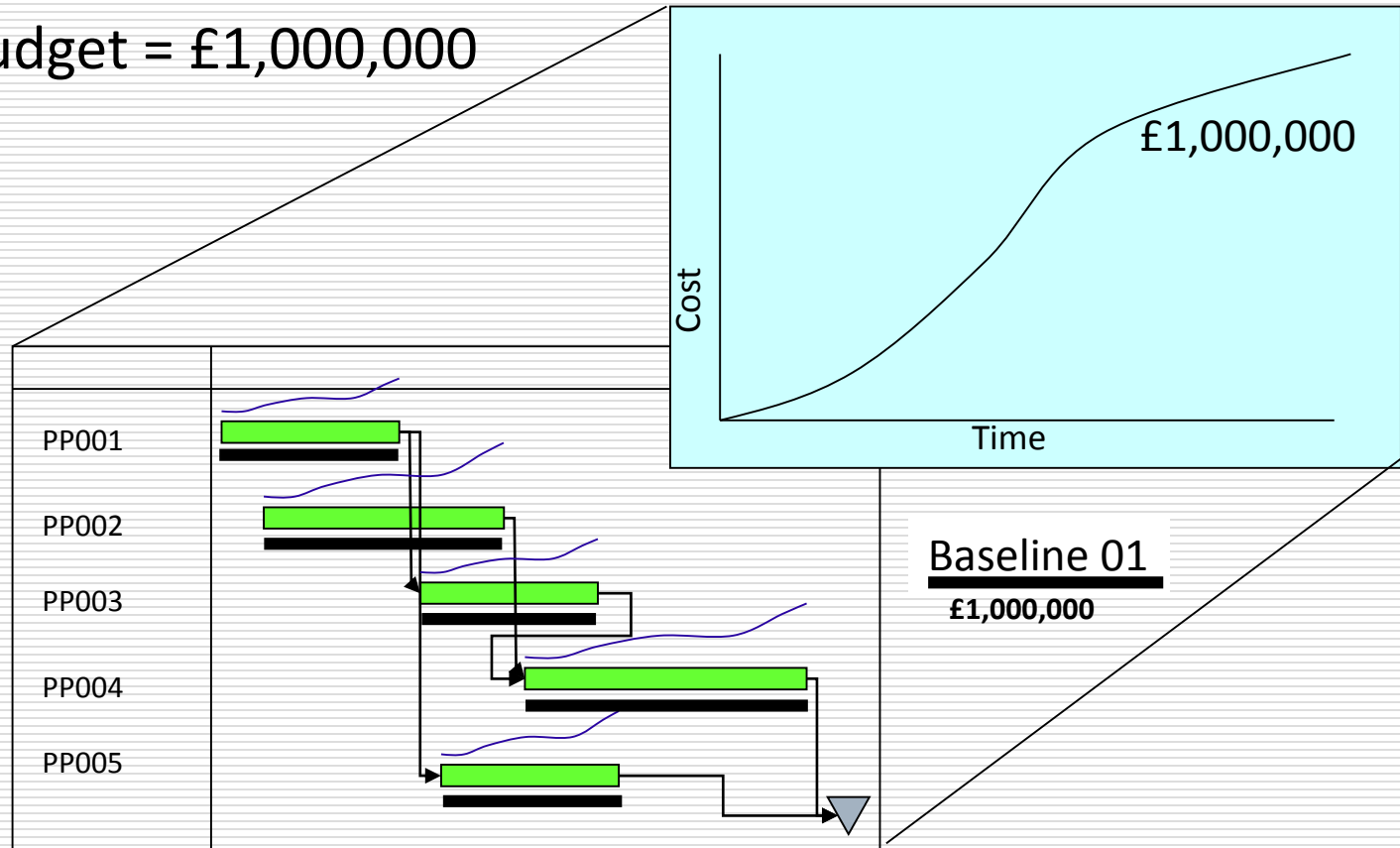
Excercise

Exercise 1
Structure your Data

Data Cubes –
remember project systems are databases

Actual Cost

Forecast Cost

Budget

Invoiced

Earned value

Cost
Milestones
Risks
Change
Safety

Jan

Feb

Mar

Apr

May

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Cost Control - Planned Value (PV)

Project Budget = £1,000,000

Cost Control - Definition of Actual Cost (AC)

The toughest value to get right

Actual Cost (AC) Owner: Project Manager	Is the value of work done against a specific cost code, and is defined as follows:
	• Direct costs (Staff, stores items etc.)
	• Procured Items - the value of the items received from the supplier and reflected on a delivery note or materials received list and for which the supplier may or may not have been reimbursed.
	• All Contracts - (including management contracts). The value of the work done, which is assessed and documented by the PM and for which payment may or may not have been effected.
	• Materials On Site - the value of the items received from suppliers and subcontractors and reflected on a delivery note or material received list and for which the supplier or subcontractor may or may not have been reimbursed.

Cost Control – Definition of Forecast (EFC, EAC, ETC)

The most controversial value to get right

Forecasts have 2 aspects

1. How much
   - ☐ Never assume the cost left is the original estimate less AC so far
   - ☐ Be aware of the original estimate component and ensure what is being delivered still reflects this (scope creep)

2. When
   - ☐ A forecast is trickier than knowing where you have been, it not only tests estimating skills but "**when**" the forecast cost will fall
   - ☐ Remember, you cannot possibly create a meaningful forecast without understanding the projects schedule – best if they are combined
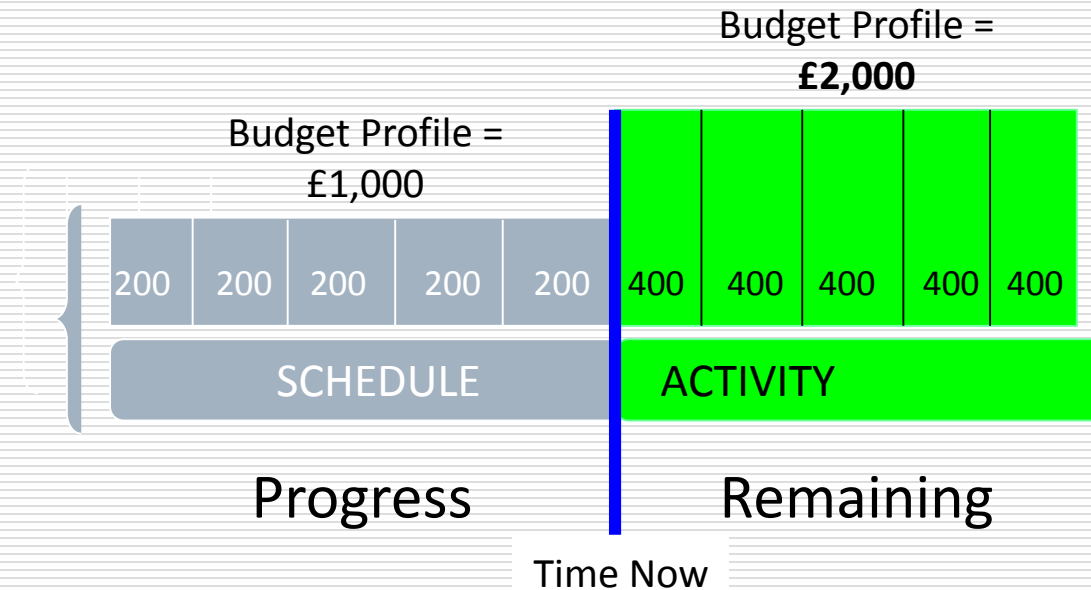
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What is EV?

It is a means of measuring what you have achieved

- Rather than simply how much you spent!

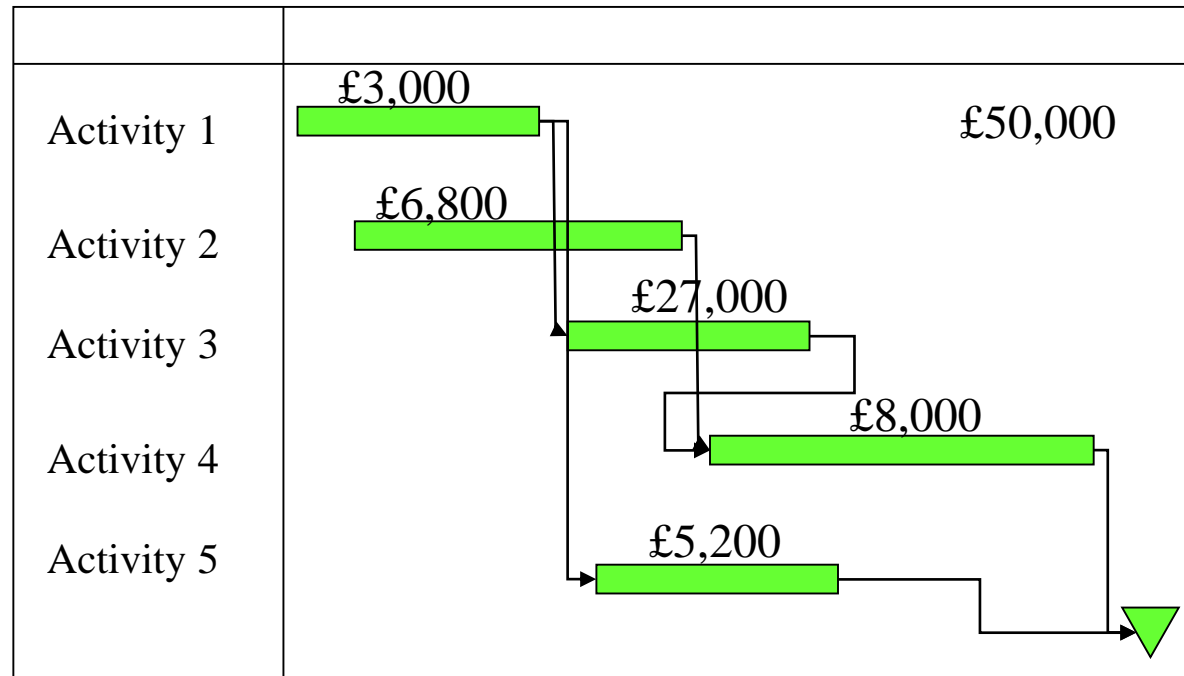(its also a great way of estimating where you are going to end up!)

Measuring Progress – Physical or Time?

Setting the Budget Profile

Activity | 200 | 200 | 200 | 200 | 200 | 400 | 400 | 400 | 400 | 400 | £3,000

Budget Profile = **£2,000**

Budget Profile = £1,000

| 200 | 200 | 200 | 200 | 200 | 400 | 400 | 400 | 400 | 400 |

SCHEDULE | ACTIVITY

0days | 10days | 20days

Measuring Progress – Physical or Time?

Time % Complete = 50%
Physical % Complete = 33% ▶ **NOT THE SAME!**

Budget Profile = **£2,000**

Budget Profile = £1,000

| 200 | 200 | 200 | 200 | 200 | 400 | 400 | 400 | 400 | 400 |

SCHEDULE | ACTIVITY

Progress | Remaining

Time Now

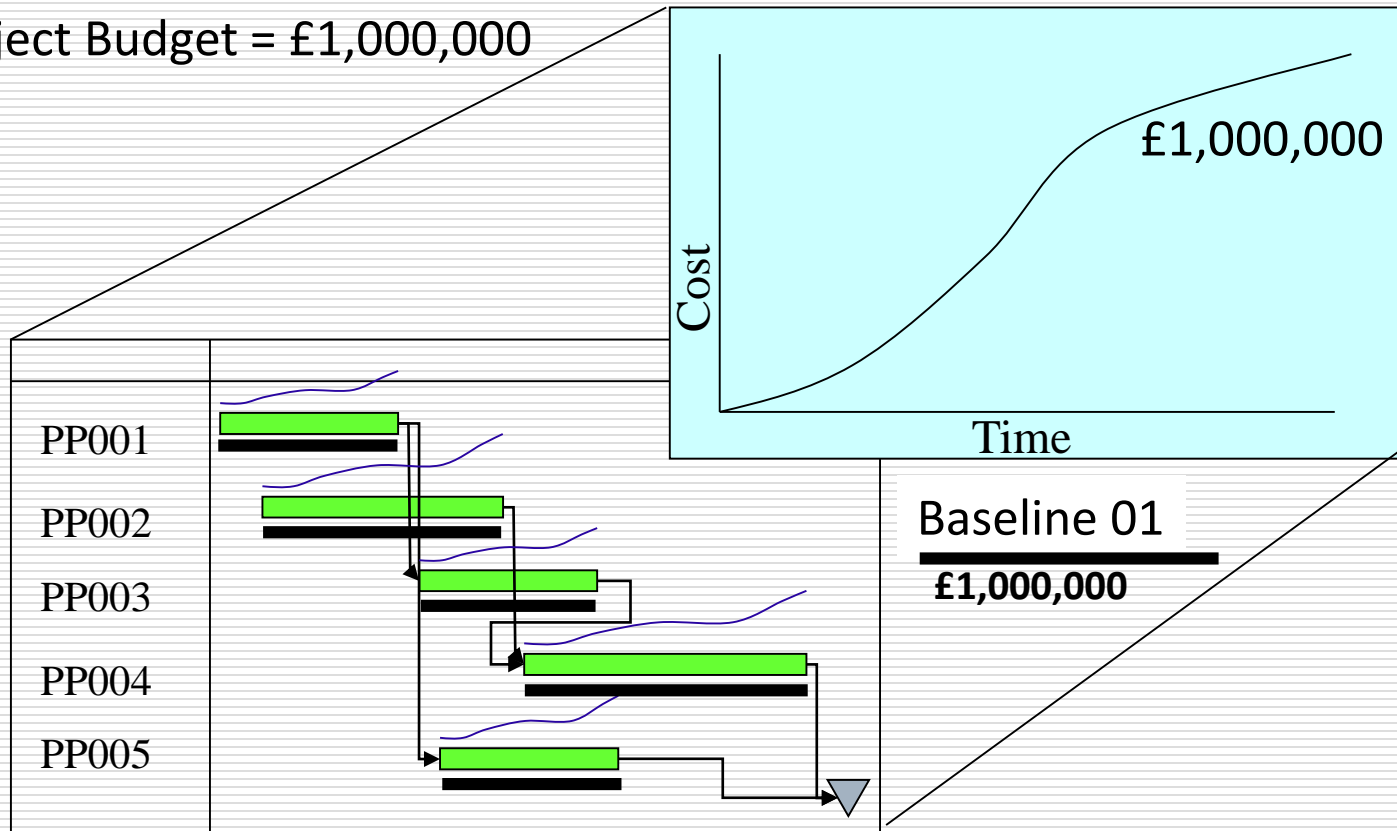# Project starts with Level 3 schedule

Control Account 01
Planning Package 001

Each activity is budget loaded

Traditional Monitoring

AC	Actual Cost (Cash + Accrual)	CM	Period
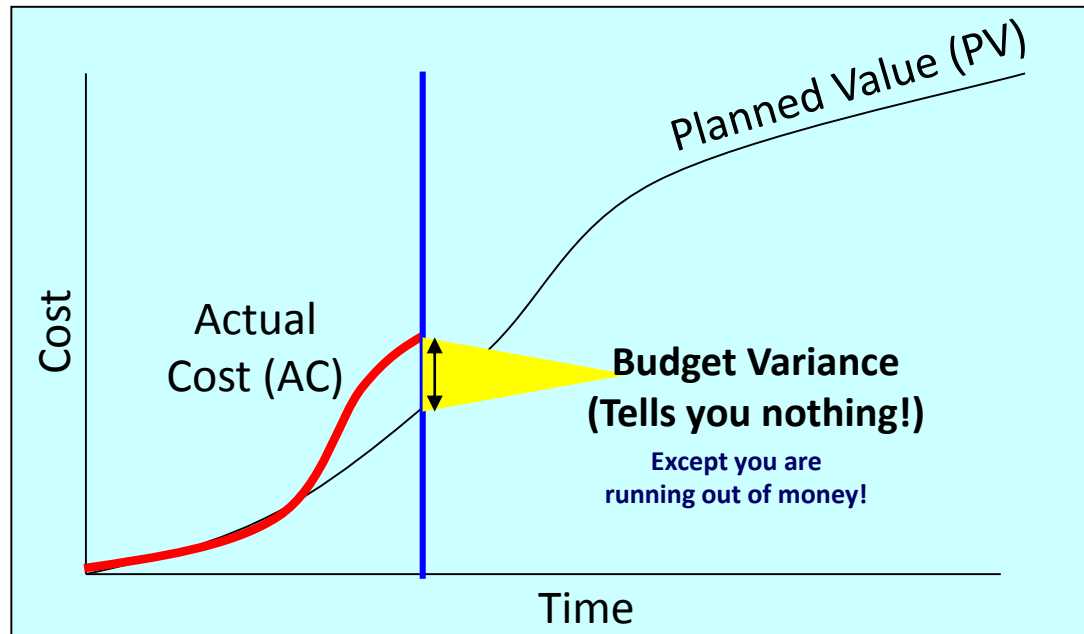
Earned Value Monitoring

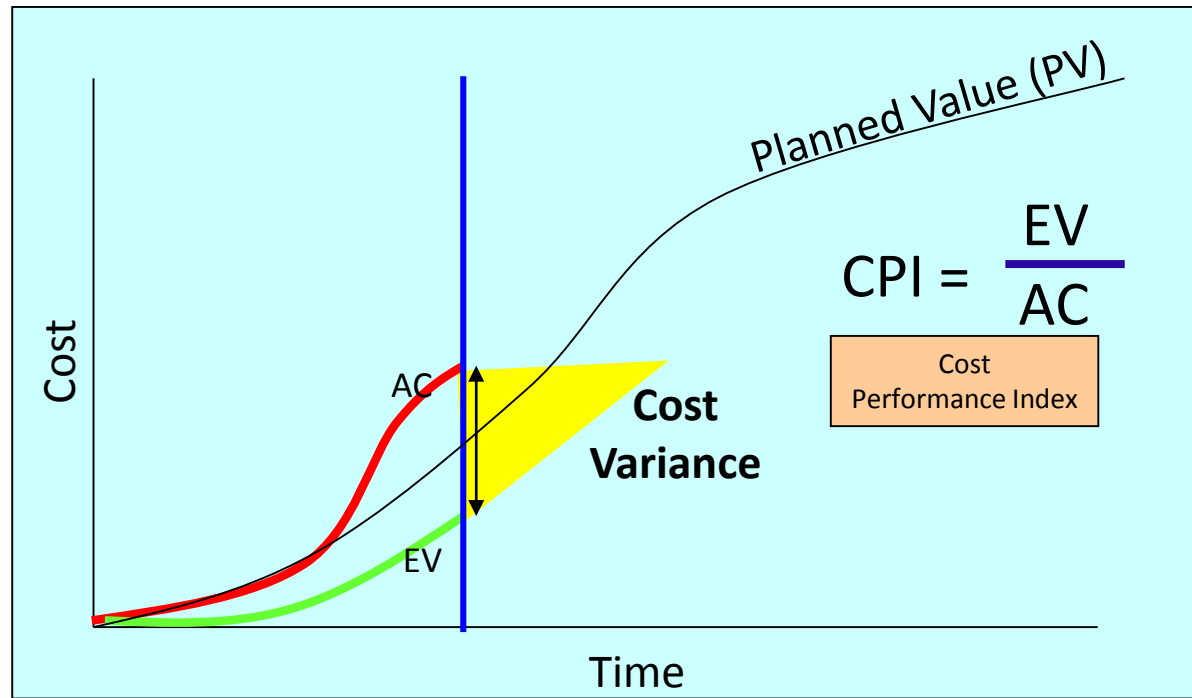| EV	Earned Value (Progress)	CM/Planner	Period

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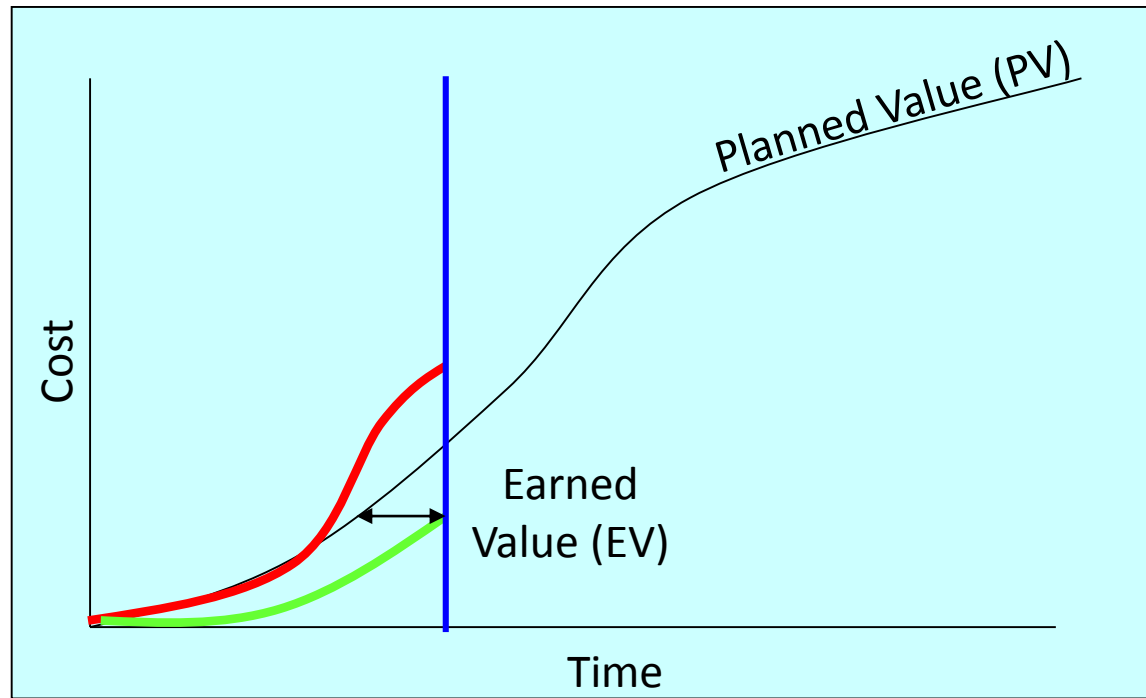
Earned Value Monitoring

SPI	Schedule Performance Index	P3ec Calculated	Period

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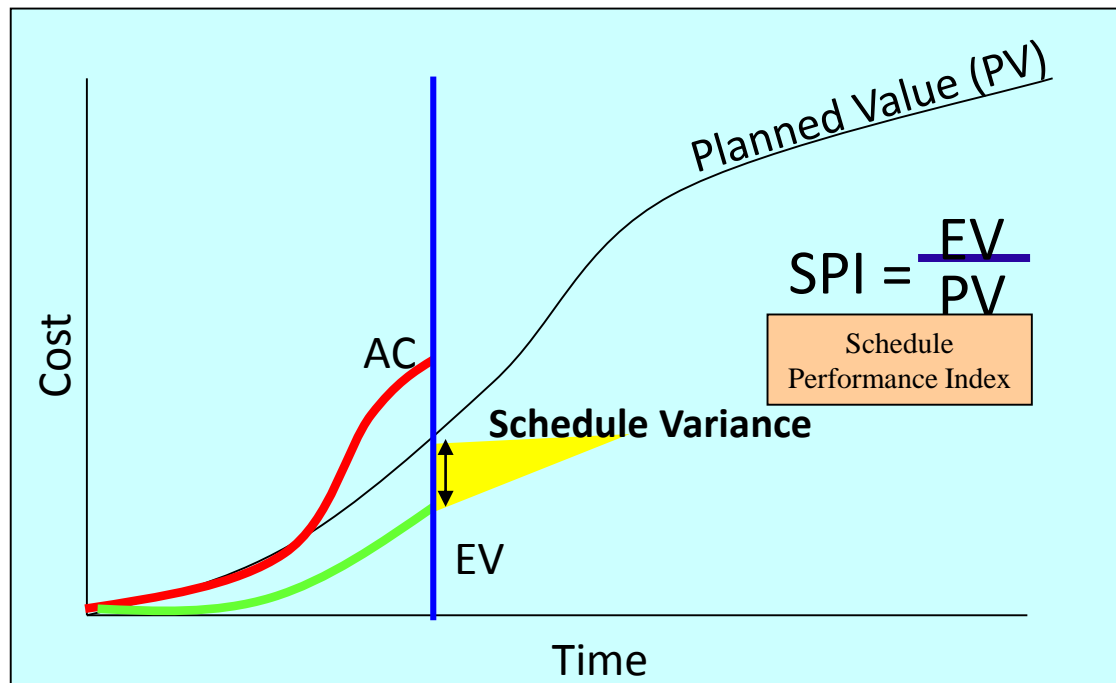
Earned Value Monitoring

CPI	Cost Performance Index	P3ec Calculated	Period

$$CPI = \frac{EV}{AC}$$

Cost Performance Index

Does EV cost?

- Yes

- So does poor performance

- So does poor strategic decisions

- So do over optimistic promises to the client

Cost Control in TTT

Exercise 2
Change Happens

Project Change

Tracking Change on projects is arguably 100% of our job!

☐ Change means;

- ■ Project Scope has changed

- ■ Cost plan (PV) has almost certainly changed

- ■ Your baseline is no longer valid

☐ Risk that becomes real <u>is a Change</u>

- ■ Follow change process to embed in project

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Reporting - Basic dashboard,
and the numbers matter!
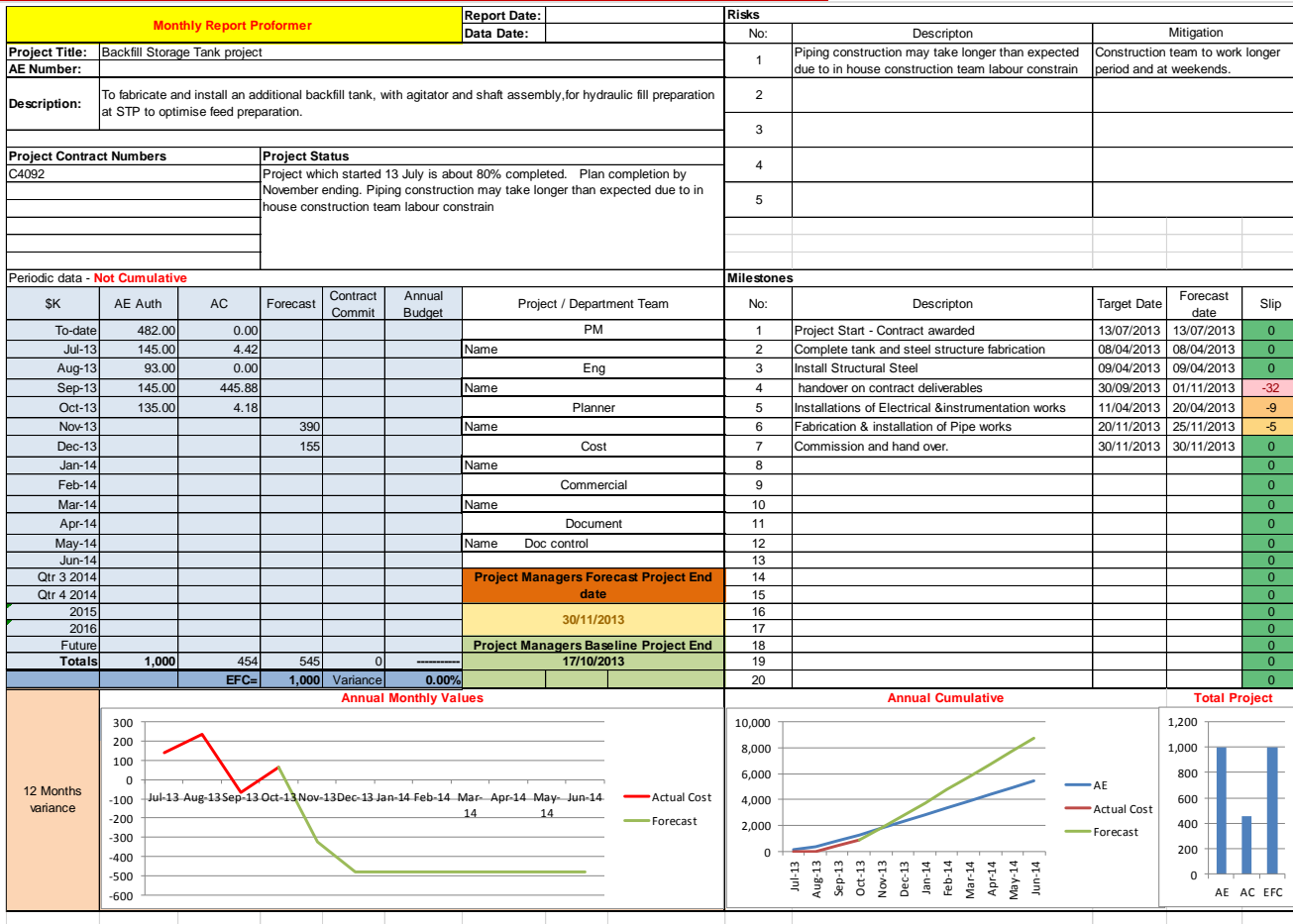
Reporting - The philosophical bit

☐ Why do we produce reports?

■ Demonstrate to an Auditor that the project was/is under control

■ To give an integrated view of the project, a "balanced scorecard" that encourages balance between the cost, schedule, risk safety, change etc.

■ Provide a discussion prompt

■ Provide a drumbeat to the project

Project Controls
E X P O

Closeout

☐ Cost Control is integral with the scheduling

☐ Change is constant

☐ There is a lot of help out there, get involved with the Project societies

☐ Projects are not for ever, but there is always another one. Build the world one project at a time

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