



Project Controls

E X P O

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To Baseline or Not to Baseline
What should be the basis?

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Project Controls
E X P O

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David Birch Profile

- 38 years experience in the delivery of high-profile UK and international project portfolios for world leading engineering contractors
- 28 years of Project Controls and Operational Management experience
- Currently Head of Project Controls at National Grid in the UK
- CLM Programme Controls Manager - London 2012 Olympic Games Construction for the Olympic Delivery Authority (ODA)
- In addition, delivered projects in other industry sectors including:
 - ✓ UK & International projects in Oil and Gas
 - ✓ Nuclear decommissioning and clean-up
 - ✓ Conventional and Nuclear Energy
 - ✓ Utilities (including Electricity, Gas, Water, Telecoms)
 - ✓ Infrastructure, Sporting Venues and Industrial

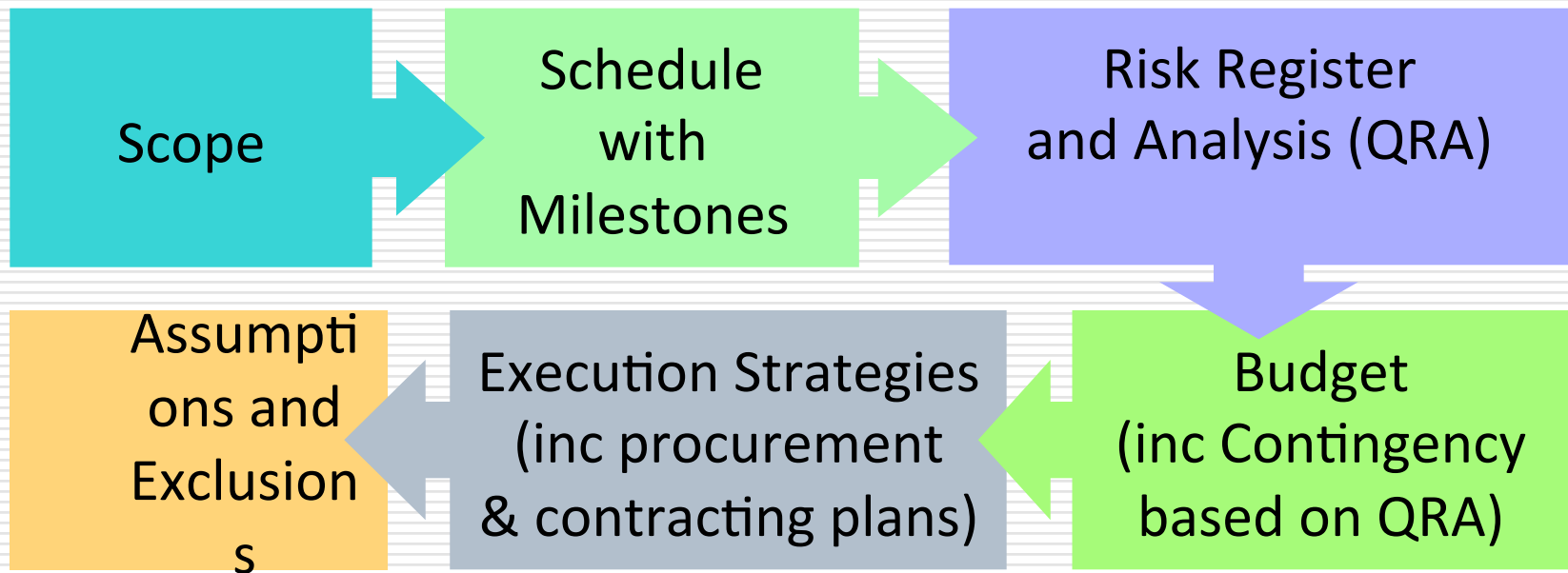
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What is a Baseline?

APM Definition: **The reference levels against which a project, programme or portfolio is monitored and controlled.**

A Baseline should capture and reflect:



To Baseline or Not to Baseline?

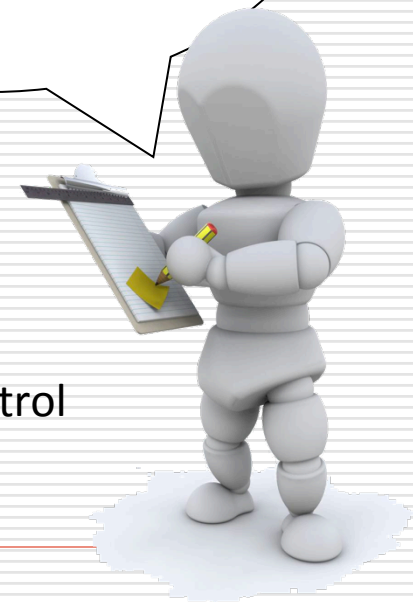
To Baseline

- Drives good scope definition and assumptions
- Allows performance to be measured
- Enables change to be defined and controlled
- Facilitates early warnings on compromised project outcomes (when used with forecasting)

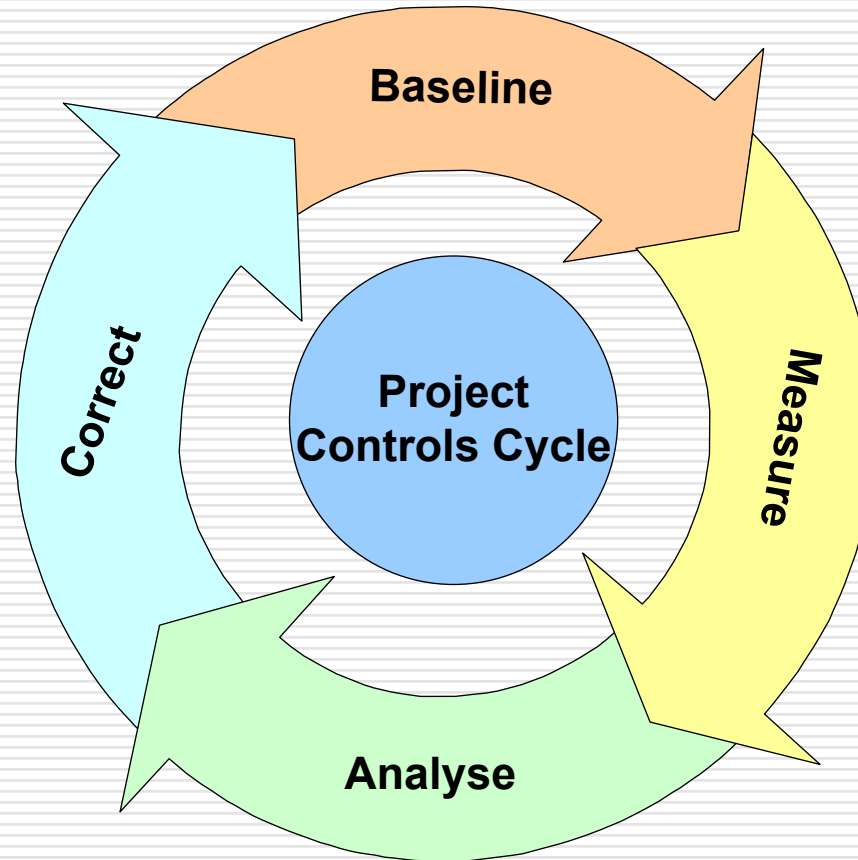
Not to Baseline – the common complaints

- The scope isn't well defined yet
- There'll be a lot of change - it'll be out of date as soon as it's set
- You can't change a Baseline, we need a flexible plan here
- It takes far too much effort to run a Baseline with full change control
- This project isn't big enough to need it

Baselining is great of course, but it's not quite right for *my* project



The fit within Project Controls - 1



The fit within Project Controls - 2

EVM System (32 Criteria)

A.1 Organisation (1-5)

A.2 Planning, Scheduling and Budgeting (6-15) - *THE BASELINE*

A.3 Actual Costs (16-21)

A.4 Analysis and Reporting (22-27)

A.5 Change Management (28-32)

Getting the system right leads to:

Informed, effective management and decision making by knowing:

- What has been achieved of the plan
- What it has cost to achieve the planned work
- If the work achieved is costing more or less than was planned
- If the project is ahead of or behind the planned schedule

Establishing the Baseline

- Original Baseline Budget (OBB) should be formally agreed
- OBB includes distributed project budget and contingency
- Baseline should be a simplified high-level version of a detailed model which becomes the forecast dataset
- Level of detail determined by complexity of the project, planned to the level where there is sufficient information/knowledge to manage
- The BASELINE is the basis for performance measurement during execution and should be formally approved and published

What level of Detail & Control?

Complex Projects – Large And Small

- Detail WBS (minimum Level 4)
- Milestones and fully cost loaded schedule
- Project Execution Plan
- Full project controls system (including Earned Value)

Large Simple Projects

- WBS to Level 2 or 3
- Milestones with cost loaded schedule on high level activities
- Simple budget breakdown
- Basic project controls (monitoring of milestones & actual cost against plan)

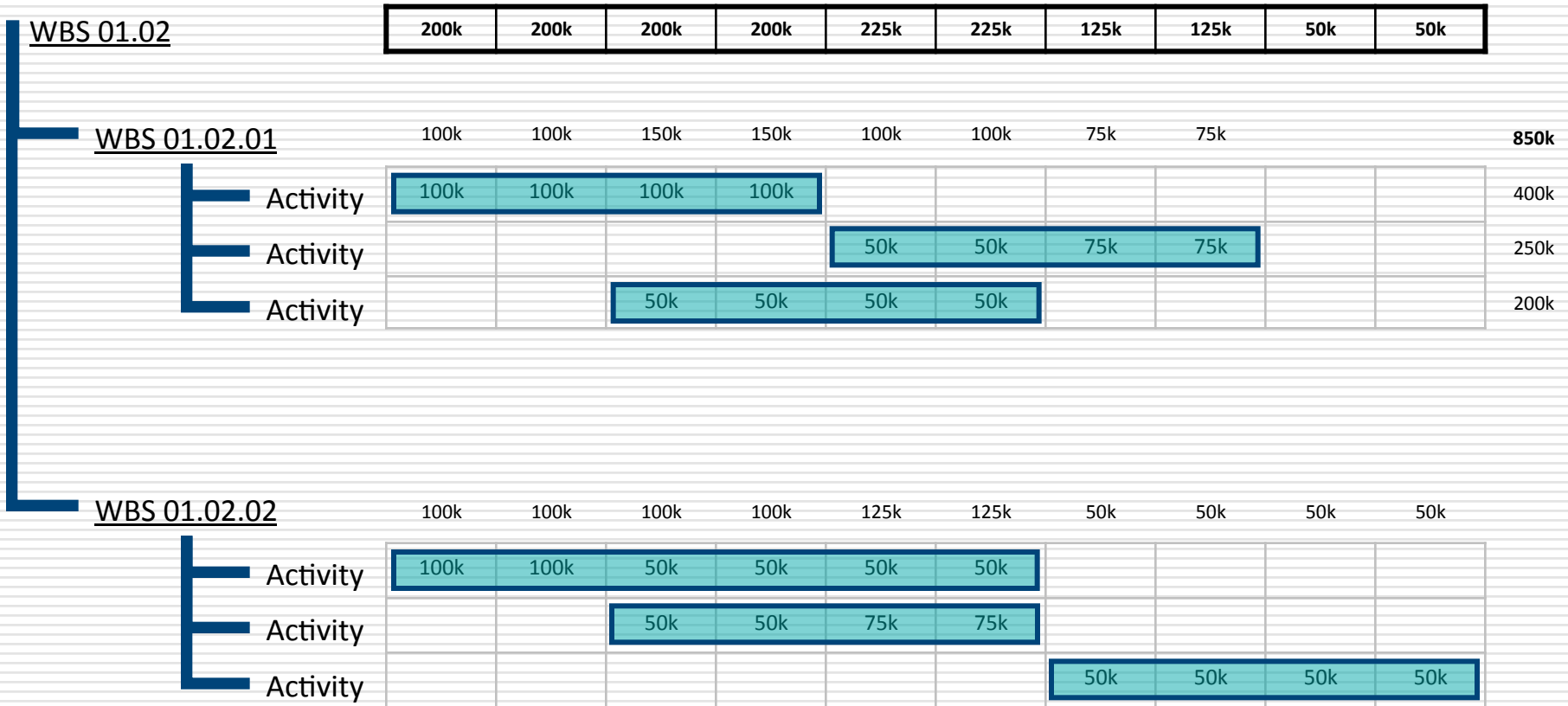
Small Simple Projects

- One line WBS
- One line cost profile and milestones
- Simple budget breakdown
- Basic project controls (monitoring of milestones & actual cost against plan)

Elements that make up a Baseline

- Work Breakdown Structure (WBS) derived from Scope definition
- WBS Dictionary
- Project Milestones and Schedule with costs loaded at WBS level
- Project Estimate broken down by WBS (Cost breakdown may be at lower levels under each WBS element)
- Project Execution Plan (PEP)
- Risk Register that underpins Contingency value in Estimate
- Documented Assumptions and Exclusions
- Basis for establishing Earned Value by activity type (EV Technique)

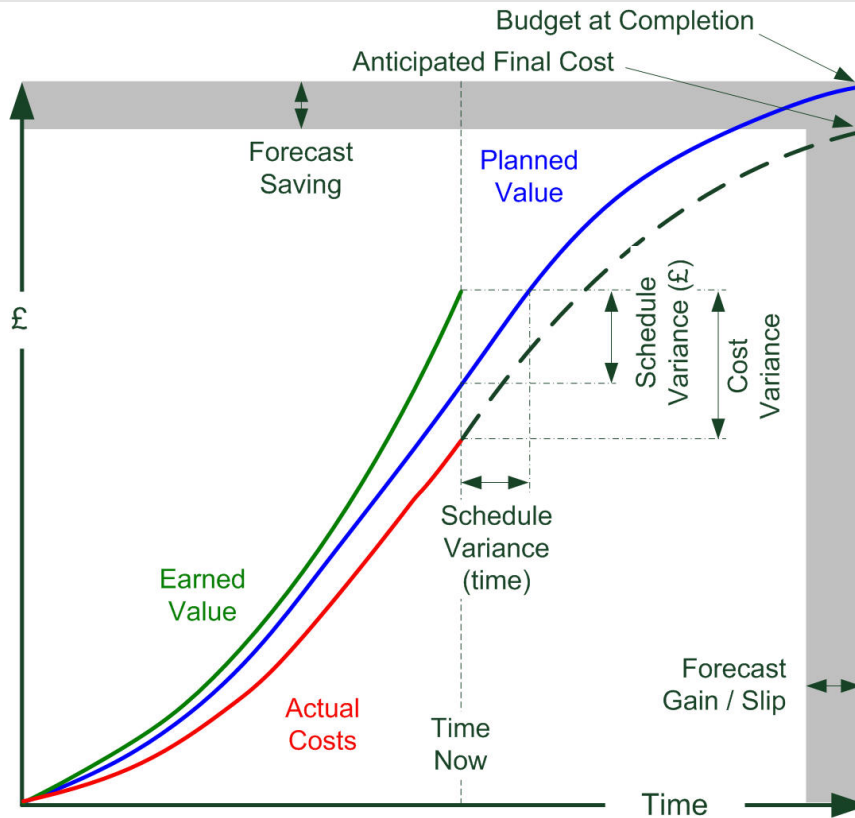
Baseline Output



Measuring Performance against the Baseline

- The Performance Measurement Baseline is used to establish Earned Value measurements
- Definition:
Performance Measurement Baseline (PMB). The time-phased budget plan against which contract performance is measured. It is formed by the budgets assigned to scheduled cost accounts and the applicable indirect budgets. For future effort, not planned to the cost account level, the Performance Measurement Baseline also includes budgets assigned to higher level CWBS elements, and undistributed budgets. It equals the total allocated budget **less management reserve or contingency.**

Performance Basis



Performance Indices (favourable is >1.0, unfavourable is <1.0)

Cost Performance Index (CPI) = $\frac{\text{Earned Value}}{\text{Actual Cost}}$

Schedule Performance Index (SPI) = $\frac{\text{Earned Value}}{\text{Planned Value (Baseline)}}$

Variations (favourable is positive, unfavourable is negative)

Cost Variance (CV) = $\text{Earned Value} - \text{Actual Costs}$

Schedule Variance (SV) = $\text{Earned} - \text{Planned Costs}$

Variance at Completion (VAC) = $\text{Budget at Completion (BAC)} - \text{Anticipated Final Cost (AFC)}$

Anticipated Final Cost (AFC)

(AFC = cost to date + estimate for remaining work)

$$\text{AFC} = \text{Actual Costs} + \frac{(\text{Budget at Completion} - \text{Earned Value})}{\text{CPI}}$$

% Scheduled / Complete / Spent

% scheduled = $\frac{\text{Baseline Value (planned costs)}}{\text{BAC}} \times 100$

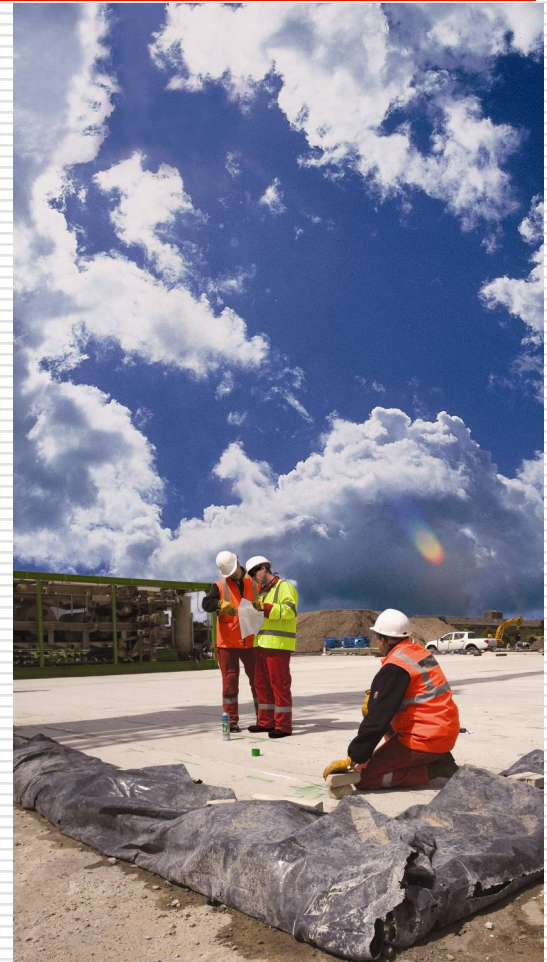
% complete = $\frac{\text{Earned Value}}{\text{BAC}} \times 100$

% spent = $\frac{\text{Actual Costs}}{\text{BAC}} \times 100$

Once approved the Baseline
forms the basis for CHANGE

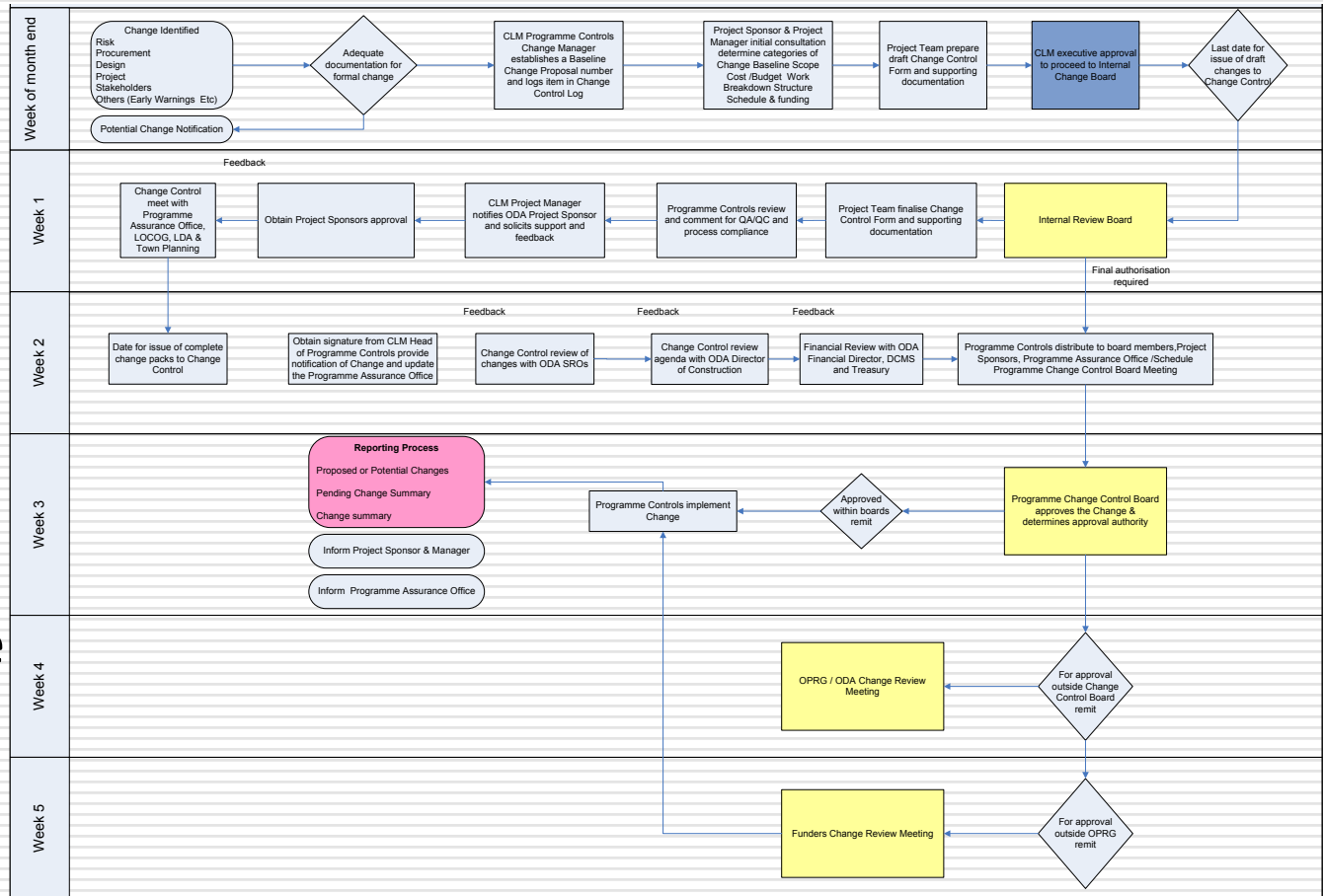
and one of the
certainties of project
life is that things will

...change

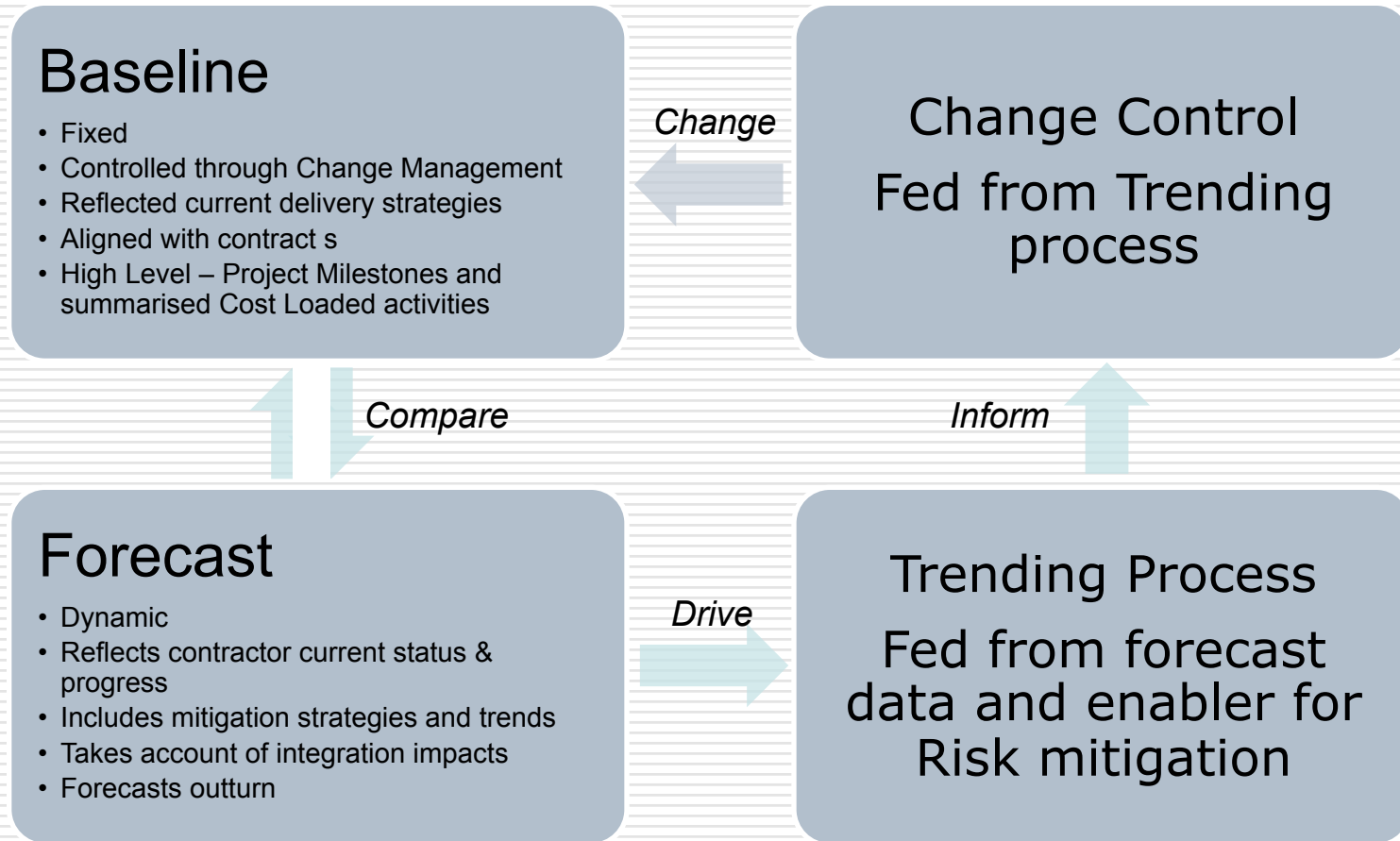


Change Management Process

Imperative to establish a Change Management process that is part of the monthly update cycle



Baseline Management Dynamics



Managing the Baseline (using Change Control)

Rules

- Imperative to measure against a plan which reflects reality (i.e. is current)
 - ✓ Evolve toward a 'bottom up' basis which reflects accepted contractor's plans
 - ✓ All changes require approved Change Control no matter how small or insignificant (*using delegated levels of Authority for lower value changes*)
 - ✓ Current Budget Baseline (CBB) = OBB + approved changes

Achieved through

- Focused Re-planning
 - ✓ Knowledge based updates as more information is available to inform the plan
 - ✓ Series of anticipated changes aligned to design & build life-cycle
 - ✓ By Project or Sub-Project Level
- Rigorous Change Control

Tips for successful creation and use of a Baseline

- Spend the time and resources to get your Baseline right (and minimise heartache down the road)
- Keep Baseline high level and ensure Forecast is dynamic and integrated
- Everyone must work within the WBS structure
 - ✓ Cost collection system fully keyed in by coding
 - ✓ Contractors keyed in at lower levels
- Provide right level of alignment, training and assurance to include:
 - ✓ Customer's and stakeholder's organisations
 - ✓ Early engagement with Contractors teams
- Keep checking fitness-for-purpose - Does the Baseline reflect current Delivery strategy and objectives?

Three principles to remember

1. Creating a Baseline and keeping it current is **essential for effective management decision making**
2. Updates must be **rigorously controlled** through the Change process
3. Ensure a comprehensive **Risk process** is integrated with the Controls processes that create the Baseline

Wrapping Up

- Likely outcomes with a Baseline
 - Encourages structured approach to managing a project
 - There is a controlled plan to measure performance against
 - Facilitates early identification of issues
 - Early warnings enable mitigation strategies to be employed to minimise impact of change
 - Successful project delivery (*on or before time & under budget*)
- Likely outcomes without a Baseline
 - Encourages unstructured & disjointed approach to managing a project
 - Plan keeps moving
 - Unsure of project issues and change identified after occurrence leaving no chance to mitigate
 - Unsuccessful project delivery (*late delivery & over budget*)