Data Capture and Cost Database

why the development and maintenance of an effective data capture and cost database is business critical to water companies

by Dylan Davies

Every business needs to fully understand the nature and magnitude of its capital, operational and consequential costs to enable it to make informed decisions regarding the whole life cost of asset ownership. The collation and analysis of historical and current data is vital when reviewing performance and estimating and planning future investment programmes. In addition, water industry companies have a duty to capture information from all aspects of their business to comply with the strict regulatory reporting requirements.

Ofwat carries out a price review every five years in order to set price limits that allow each water company to finance its core activities to meet its statutory obligations whilst protecting the interests of customers. A central component of this price review is the assessment of the water company's capital efficiency by benchmarking it against its peers. This is achieved by analysing the company's estimated capital works unit costs over a range of standardised projects to obtain standard costs. Where a company's standard costs are identified as being high compared to its peers, it is regarded by Ofwat as an indication that there is scope for improvement leading to the delivery of a capital works programme for less cost than originally forecast.

In the past, companies would carry out the necessary data capture and analysis only every four to five years to satisfy Ofwat. This led to a flurry of activity that invariably disrupted normal day-to-day running of the businesses at that time. In addition water companies have used data from previous price reviews without incorporating adequate efficiencies and used cost models which were derived from too small a sample of projects; relied on notional models. This was partly due to a lack of company specific historical and actual cost data and suffered from a lack of relevant data. Ofwat has been critical of these weaknesses in company information systems.

Companies which capture actual cost data and feed it into a cost database will always have up-to-date cost information which will enable them to satisfy Ofwat's data requirements without the disruption to day-to-day activities. Moreover, the cost database will enable them to produce accurate estimates of future projects and programmes of work and they will be able to monitor true efficiencies over time.

A fundamental database design consideration is the nature and format in which data should be collected. Decisions need to be made in relation to the level of detail that should be captured (the work breakdown structure), i.e. process component, resource or elemental level. Project and component 'yardstick' information will also be required in addition to cost information. Aligning the cost and 'yardstick' information with the requirements of the database is critical.

Appropriate systems and processes need to be embedded within the organisation's supply chain to facilitate data capture. Documented processes for data capture together with process maps and procedures which detail the requirements should be integrated within both the capital and operational delivery areas as part of business as usual activities. Companies that operate in a Partnering or Alliancing environment have a unique opportunity to enhance the quality of the information gathered, which is often not possible under more traditional arrangements.

Possessing a database of project cost and yardstick information will enable a company to benchmark contractor performance and identify best practice in capital delivery. By comparing the performance of delivery teams, the processes which result in good performance can be identified and used to establish future efficiency targets and best practice can be transferred to other areas of the business. If cost models are updated via a continuous data feed, then this can provide a valuable indicator of achieved efficiencies, both internally and externally, via comparisons with UK average prices.

The ultimate objective of any data capture and cost database programme implementation is to create a mechanism to facilitate the identification and implementation of strategies which will result in continuous monitoring of, and improvements in, efficiencies within the delivery of the capital programme and long term operating costs.

Having already established databases for Thames Water, Scottish Water and South West Water, ChandlerKBS was commissioned by Dwr Cymru Welsh Water (DCWW) to develop a bespoke database to enable it to comply with its regulatory requirements and to increase the efficiency and accuracy of its cost estimating function. Initial development of a standard hierarchy for assets, process components and elements was undertaken followed by the design of a standard data capture template (DCT) for the collection and recording of capital, operational and maintenance costs together with the required yardsticks. In addition it allows the collation of information relating to consequential costs arising from asset failures and serviceability issues. A further feature is a statistical package which generates cost models from the inputted data and enables projects to be estimated at a variety of levels and stages based on company specific and recent project data. The DCT and work breakdown structure were aligned with the company's asset and accountancy systems.

The database enables continuous benchmarking of performance and the calculation of reliable rates which are used to inform future decision making processes. This consists of an independent and 'live data feed' system that transfers cost data captured by the delivery teams into a useable format which is stored in a central unit cost database. The overall data capture process is embedded within the business-as-usual approach to enable effective cost data capture coming from the target cost and actual cost information. Capital, operating and consequential cost data is converted into cost models, assembly costs and unit rates which are used in preparing future target costs.

We are currently enhancing the database by incorporating the shadow cost of embedded and operational carbon. The cost of carbon and operational cost models will enable the assessment and selection of interventions that have the optimum balance between capital cost, operating cost and environmental impact over the life of an asset or programme.

The development and maintenance of a suitable data capture and cost database mechanism is an investment which will provide significant benefits. Not only will it satisfy Ofwat's regulatory reporting requirements, but it will facilitate the identification of efficiency opportunities in the delivery of future investment programmes.

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Good ideas, great models

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